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**Christmas Joy and a Helpful New Year. The Progress Made in the Revisions of the Pharmacopœia and the National Formulary, Both as to Scope and Requirement, Signifies a Most Important Service for the Professions Concerned with Medical and with Pharmaceutical Practice in the Protection of Public Health and in Promoting the Welfare of the Public.**

JAN 28 1936

Vol. XXIV, No. 12 DECEMBER, 1935

# JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

## CONTENTS


Frontispiece and Sketch—The United States Pharmacopœia, The National Formulary ..... 1049
Editorial:
The New Pharmacopœia ..... 1050
The New National Formulary ..... 1051
Scientific Section:
Observations on the Opium Assay—Rosin and Williams ..... 1053
Gelatin as a Stabilizing Colloid for Oil in Water Emulsion Systems—Tice ..... 1062
A Note on the Action of Alkalies and Alkali Salts on Antipyrine—Harris and Tebow ..... 1069
Phytochemical Notes—Gisvold ..... 1071
Comparison of Spectrometric Method and Antimony Trichloride Test for Estimation of Vitamin A Potency—Jones and Christiansen ..... 1072
Enteric Coatings. II. Excretion Studies with Sodium Salicylate Tablets—Wruble ..... 1074
Compound Solution of Cresol—the Variation of Phenol Coefficient when Different Oils Are Used for Saponaceous Base—Burrin, Worton and Bibbins ..... 1077
Improvement in Technique in the Preparation of Three Common Products—Davy ..... 1079
Potent Medicaments in Sugar-Coated Pills and in Confections—Suchy ..... 1081
National Unity of State Coöperation between Pharmacist, Physician and Dentist—Schicks ..... 1083
Dentistry and Pharmacy—Meaney, D.M.D. ..... 1087
Foresight in Professional Pharmacy—Stuhr ..... 1092
The Department of the American Association of Colleges of Pharmacy:
The Content of a Pharmacognosy Course—Fiero ..... 1095
The New U. S. Pharmacopœia, Eleventh Revision ..... 1098
Proceedings of the Local Branches ..... 1100
Association Business ..... 1107
Committee Reports:
Report on the Twelfth International Congress of Pharmacy—Hume ..... 1113
International Pharmaceutical Federation ..... 1120
Obituary ..... 1123
Personal and News Items ..... 1124
Book Notices and Reviews ..... 1124
Index ..... III
Pharmaceutical Abstracts and Index ..... 333-408
Advertising—Cover Pages 2, 3 and 4 and pp. I–XVI.


Published Monthly by the American Pharmaceutical Association: Office of Publication, 20th & Northampton Sts., Easton, Pa. Editorial Office, 2215 Constitution Ave., Washington, D. C. Annual Subscription, $4.00; Canada, $4.35; Other Foreign, $4.50; Single Numbers, 35 cents; Canada, 40 cents; Other Foreign, 50 cents.

**THE 84th ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN DALLAS, TEXAS, 1936.**

**The 1936 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conference of Pharmaceutical Association Secretaries, of the Pharmaceutical Law Enforcement Officials and the Plant Science Seminar will also be held in Dallas, Texas.**

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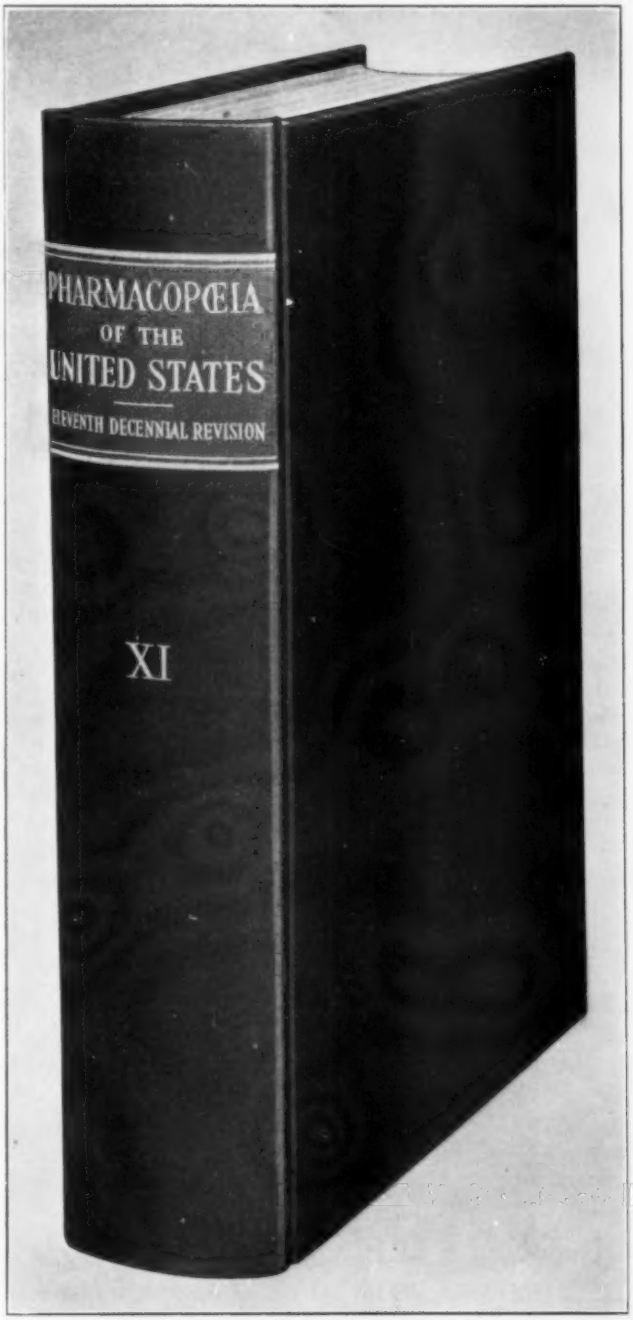


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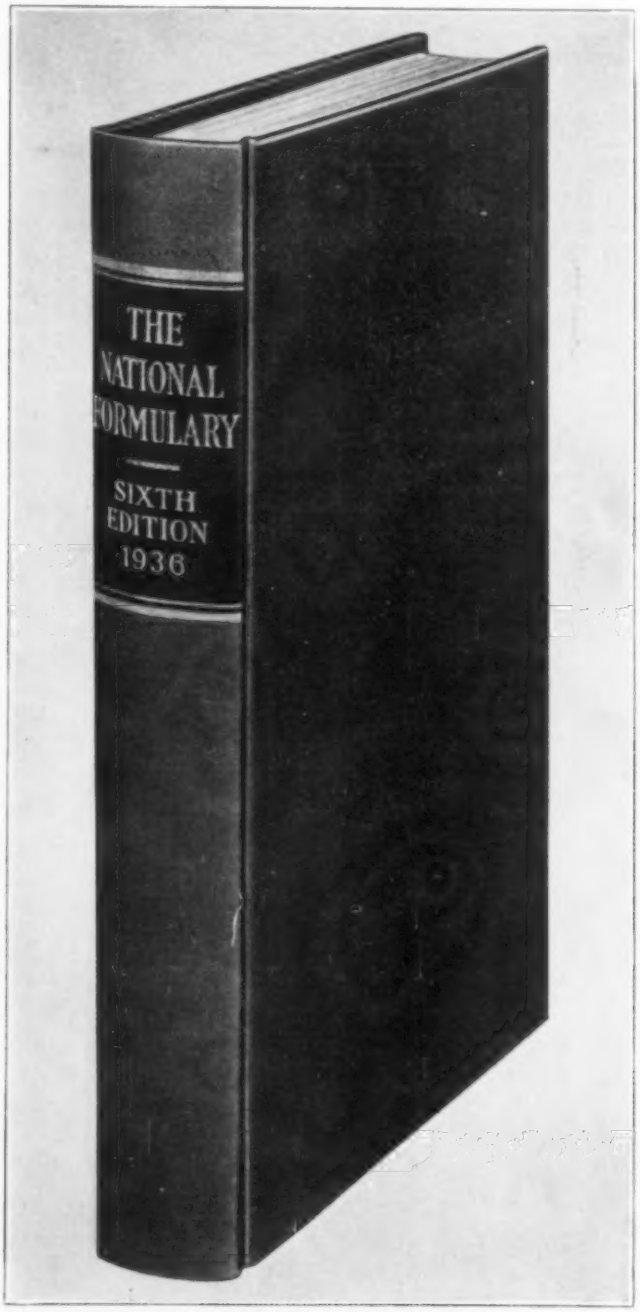


The New National Formulary.

# JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XXIV DECEMBER, 1935 No. 12


## THE UNITED STATES PHARMACOPŒIA.

"In January 1817, Dr. Lyman Spalding, of New York City, submitted to the Medical Society of the County of New York, a project for the formation of a National Pharmacopœia."—See JOURNAL A. PH. A., for August 1917, page 617.

"The General Convention for the formation of a National Pharmacopœia assembled in the Capitol, at Washington, January 1, 1920, and elected Samuel Mitchell, M.D., *President*, and Thomas T. Hewson, M.D., *Secretary*."

LYMAN SPALDING, 1775–1821.

Two Pharmacopœias were submitted and consolidated into one work, which, after full revision, was adopted by the General Convention, and ordered to be published by a committee appointed for that purpose, of which Dr. Lyman Spalding was elected *Chairman*. It was published in Boston, December 15, 1820. The plan of decennial revision has been followed—the present edition is the Eleventh Decennial Revision.—See Chapter on the History of the United States Pharmacopœia published in the U. S. Pharmacopœia.

## THE NATIONAL FORMULARY.

Early in its history the AMERICAN PHARMACEUTICAL ASSOCIATION gave attention to the problem of preparing a standard formulary. Prior to the publication of the National Formulary, Prof. J. U. Lloyd compiled and published a book of "Elixirs." He granted permission to the committee in charge of the New York and Brooklyn Formulary to use any formulas in his book as the basis for a National Formulary. The *Chairman* of the Committee on National Formulary of the AMERICAN PHARMACEUTICAL ASSOCIATION was Charles Rice[1], and C. Lewis Diehl[2] was named *Chairman* of the Committee of Revision.—See Historical Introduction of the National Formulary. The Sixth Edition of the National Formulary is now completed under the direction of Chairman E. N. Gathercoal.

CHARLES RICE, 1841–1901.

C. LEWIS DIEHL, (about 1886), 1840–1917.

[1] April (1931), JOUR. A. PH. A., page 364. [2] September (1925), JOUR. A. PH. A., page 765.

# EDITORIAL

E. G. EBERLE, EDITOR 2215 Constitution Ave., WASHINGTON, D. C.

## THE NEW PHARMACOPŒIA.

THE Eleventh Revision of the United States Pharmacopœia was released for national distribution on December 16, 1935, and will become official on June 1, 1936. It is approximately ten years since the U. S. P. X, which it supersedes, was similarly released (August 15, 1925) and about one hundred and fifteen years since the First Edition of the United States Pharmacopœia was presented to the medical and pharmaceutical professions by Dr. Lyman Spalding. It is proper that we should pause at this time to honor Dr. Spalding. He was a pioneer in the profession he represented, being among the first in this Country to advocate the use of smallpox vaccine. He was an unselfish, wise and skilful leader of men, his vision was nation-wide and his culture and professional skill were reflected in the United States Pharmacopœia of 1820.

It is remarkable that the underlying principles which he developed and incorporated in the Pharmacopœia of 1820 are to-day the fundamental policies of the Pharmacopœia of 1936 and only in the degree to which they have been realized is the new Revision to merit approval.

On the first page of the Preface of the U. S. P. 1820, Dr. Spalding wrote: "It is the object of a Pharmacopœia to select from among substances which possess medicinal power, those, the utility of which is most fully established and best understood."

In the next paragraph he wrote: "The value of a Pharmacopœia depends upon the fidelity with which it conforms to the best state of medical knowledge of the day."

It has been the earnest purpose of the sub-committees of the U. S. P. XI to accomplish exactly this objective, that the Pharmacopœia of to-day might recognize, standardize and provide official titles for the important and approved medicines of 1936. In addition, the National Formulary has been developed to provide formulas and standards for many important preparations. These should reach every therapeutic need of the modern physician.

In one of the letters issued by Dr. Spalding to his colleagues in 1818, urging their participation in the development of a National Pharmacopœia, his appeal was for "Gentlemen willing to act, and men distinguished for their ability and learning." This phrase of his is destined to become classic and is the basic factor if so gigantic a task is to be accomplished with honor and credit.

A review of the long list of those distinguished men of the professions of medicine and pharmacy and of the underlying sciences supporting these professions, will evidence the fact that in the past and also in our generation this standard of excellence has been maintained by those who have carried the burden of Pharmacopœial revision.

The members of both professions believe in these standards for the Pharmacopœia, which are our rich inheritances from the past, and are determined that they shall be maintained in the future.

There are to-day many splendid pharmacists and scientific workers in this field who are conducting researches and contributing their support to the per-

fection of official medicines that the quality of the book may be improved. Their names and activities are being carefully compiled for those who are interested in the future revisions of the Pharmacopœia.—E. FULLERTON COOK.

## THE NEW NATIONAL FORMULARY.

THE National Formulary, Sixth Edition, was released for National distribution on December 16, 1935, and will become official June 1,1936. It marks a distinct advance in this country in standardization of medicinal agents and in the contributions of pharmacy to public health.

Fifty years ago, at the Pittsburgh meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, Charles Rice, as chairman of a committee, presented a proposition for a "National Formulary of Unofficial Preparations" under the auspices of the AMERICAN PHARMACEUTICAL ASSOCIATION. The first edition was published in 1888 under the foregoing title; the second edition was published in 1896, under the chairmanship of C. Lewis Diehl, who continued as chairman of the two succeeding revisions, and the Fifth Edition was published in 1926 under the chairmanship of W. L. Scoville. The history of the National Formulary is included in the text of N. F. VI, together with the "General Principles" followed in the latter edition, Edmund N. Gathercoal, chairman.

The following quotations are from pages 492–499 of the Sixth Edition and indicate the broad scope of revision: "The Chairman of the Committee of Revision of the United States Pharmacopœia was made an associate member of the N. F. Revision Committee. . .The National Dental Association appointed a special associate committee of its members for the consideration of dental formulas, and an associate committee was appointed by the American Veterinary Medical Association for the consideration of veterinary formulas. Thus were established direct contacts with these associations. An associate committee was also appointed by the American Pediatric Society." Officials of the Food and Drug Administration, U. S. Department of Agriculture and several State food and drugs departments gave valuable suggestions and advice.

The outstanding features of the Sixth Edition are summarized:

1. The admission of monographs for drugs and chemicals which are not included in U. S. P. XI or in the N. F. VI.

2. The admission of items on the basis of a definite extent of use in medical practice in the United States.

Four surveys were undertaken: In a survey of 1930, carefully prepared checklists on the extent of use of preparations of N. F. V were returned by 213 prescription pharmacies, 75 hospital pharmacies and 625 drug stores, representing nearly every state in the Union. A similar survey determined the use of a large list of unofficial preparations and a Maryland survey accounted for the number of prescriptions filled annually, showing two prescriptions per inhabitant.

The "Prescription Ingredient Survey" is based on a total of 121,924 prescriptions, the ingredients of which were listed and read by expert pharmacists in New York, Maryland, Missouri and California. On this extensive study it was decided that items to be admitted to the National Formulary must be used in at least 20 per cent of the drug stores in the United States or must be an ingredient in at least

one of each 10,000 prescriptions compounded in the United States. It is thus evident that the recognition of N. F. materia medica is based on the needs of the physicians.

3. Formulas were omitted from many monographs of simple preparations, such as extracts, fluidextracts, ampuls, tablets, etc. Ample directions in detail are included to guide in the manufacture of larger or smaller quantities of the preparation.

4. Extensive developments of ampul and tablet monographs and the section of materials and preparations for diagnostic use are of interest. The Combined Contact Committee of the American Drug Manufacturers' Association and the American Pharmaceutical Manufacturers' Association has rendered helpful services in the ampul and tablet monographs, the tolerance statements and assay processes.

5. A forward step is evidenced by the admission of glandular powders and histological description of them; for their excellence, credit is given to the subcommittee and particularly to Dr. H. W. Youngken for the histological descriptions, which insure adequate means for the determination of their identity and purity.

6. Attention is called to the development and use of many additional assays of the chemical, proximate and biological types. The monographs are arranged alphabetically.

National Formulary VI contains 481 preparations' monographs, and 208 monographs on drugs and chemicals; 232 are new to this edition, 84 are items from U. S.-P. X; the total number of monographs not admitted from N. F. V is 321—of these 246 are monographs of preparations and 75 are monographs of drugs and chemicals.

The last paragraph of the "History of the National Formulary" is quoted in full in closing the brief résumé of the new National Formulary, in which pharmacists may have pride; the medical professions will recognize the work as an essential contribution to their practice, and the Federal and State departments concerned with public health matters, food, drug and narcotic regulations, will value it as a necessary and very helpful service.

"During this period (1888–1935) fluidglycerates, glycerogelatins, mulls, and wines have had their day and have been replaced. Formulas for preparations have steadily decreased in the Pharmacopœia, and a diminishing demand is indicated in the National Formulary. Biological products have replaced some of the old drugs and remedies. The National Formulary now functions under very different conditions and purposes from those which it faced in its beginning."

The chairmen and members of the committees have rendered distinctive services, representing achievement and accomplishment.

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## ADDICTION LIABILITY OF CODEINE.

Seven men addicted to morphine were stabilized on four daily hypodermic injections of 0.05 to 0.15 Gm. of morphine sulphate over a period of from ten to thirty days. This stability was maintained when codeine was substituted gradually over three days and entirely over the subsequent eight to fourteen days. The average effective substitution dose of codeine was five times that of morphine. After the period of stabilization of codeine the administration was abruptly and completely stopped. The effects of abstinence differed only in the delay of their onset from the results of abrupt morphine deprivation. The subjects were aware of the substitution, and asked for the substituted product after its withdrawal. The author concludes that codeine possesses definite addiction liability.—C. K. HIMMELSBACH (*J. A. M. A.*, 103, 1420).

# SCIENTIFIC SECTION

BOARD OF REVIEW OF PAPERS.—*Chairman*, F. E. Bibbins; Glenn L. Jenkins, John C. Krantz, Jr., Heber W. Youngken, L. W. Rowe, L. W. Rising, C. O. Lee, E. V. Lynn, W. G. Crockett, Frederick V. Lofgren.

## OBSERVATIONS ON THE OPIUM ASSAY.*

BY JOSEPH ROSIN AND C. J. WILLIAMS.[1]

Opium is assayed in most of the Pharmacopœias by either the Helfenberger or by the Lime method. Among the Pharmacopœias using the Helfenberger method or some modification of it are the Austrian, Belgium and German. The British, French (Codex), The Netherlands, Danish and Swiss use the Lime method. The United States Pharmacopœia also uses the Lime assay method with some modification. The Lime assay seems to be the more favored. Some of the Pharmacopœias recently revised have changed from the Helfenberger to the Lime assay method.

*Helfenberger Method.*—A weighed quantity of the opium is triturated with water, then made up to a definite weight with water, and after standing for 30 minutes and mixing, it is filtered. To an aliquot portion of the filtrate, generally corresponding to about two-thirds of the original opium, 1 or 2 cc. of normal ammonia water is added with gentle mixing and the mixture filtered immediately. This treatment with ammonia precipitates the other alkaloids, such as narcotine, papaverine, etc. To an aliquot portion of the second filtrate 2 or 2.5 cc. of normal ammonia water is again added and shaken for 10 minutes, which precipitates the morphine. It is then shaken with ether or ethyl acetate, filtered, washed and the morphine weighed or titrated.

*Lime Method.*—A weighed quantity of the opium is triturated with water and slaked lime, then made up to definite weight or volume with water, mixed well and filtered. To an aliquot portion of the filtrate, generally corresponding to one-half or two-thirds of the original opium taken, ether and a small quantity of alcohol are added, followed by 1 or 2 Gm. of ammonium chloride, the addition of the ammonium chloride causing the liberation of the morphine from its combination with lime. After mixing, the mixture is allowed to stand over night. It is then filtered, washed and the morphine titrated.

The United States Pharmacopœia assay of opium differs from the other Lime assay methods in that the opium is first completely extracted with water, thus eliminating the use of an aliquot portion with the attendant uncertainties that may be occasioned by the variation in the proportions of water and insoluble matter in the opium.

Criticisms of an opposite character have been frequently leveled against the Lime method. On the one hand it is maintained by some investigators that it yields too high results, claiming that the precipitated morphine is contaminated with co-precipitated titratable lime compounds; others assert that the results obtained by the Lime assay are too low because no account is taken of the morphine lost in the assay process due to solubility of the morphine in the solvents used in the assay. The latter criticism of the Lime method appears to have been the more prevalent, and has been met by some of the Pharmacopœias using the Lime method by applying a "correction" frequently designated as "solubility correction." The

* Scientific Section, A. PH. A., Portland meeting, 1935.

[1] Merck & Co., Inc., Rahway, N. J.

correction ranges from 1 to 1.1 mg. for each cc. of lime-morphine solution used in the assay, and amounts to from 1 to 1.1% on the Opium, or to about 8% of the morphine present in the average opium. A comparison of results obtained in the assay of opium with the British Pharmacopœia—a lime assay applying a correction, with the United States Pharmacopœia assay—a lime assay but without a correction and with the German Pharmacopœia assay which typifies the Helfenberger method, is illustrated in the following tabulation:

TABLE I.—ASSAY OF OPIUM BY B. P., U. S. P. X AND PH. G. VI METHODS.

| | B. P. % Anhydrous Morphine. | U. S. P. % Anhydrous Morphine. | Ph. G. VI % Anhydrous Morphine. |
|---|---|---|---|
| Opium (partially dried) | 16.38 | 15.55 | 15.08 |
| | | 15.61 | 15.22 |
| | | 15.58 Av. | 15.15 Av. |
| Opium | 13.76 | 13.09 | 12.12 |
| | | 12.90 | 12.29 |
| | | 13.00 Av. | 12.21 Av. |
| Opium powder | 10.71 | 9.77 | 9.08 |
| | | 9.91 | 8.91 |
| | | 9.84 Av. | 9.00 Av. |
| Opium granular | 10.39 | 9.73 | 8.94 |
| Opium | ... | 15.24 | 14.75 |

The Helfenberger method it will be noted, gives the lowest indications; also, the differences between this method and the other two methods is greatest with the lower testing opiums. This is probably due to the fact that with the lower testing opiums there is a larger excess of ammonia present in the first treatment with ammonia for the removal of the other alkaloids and, therefore, more morphine is precipitated at this stage than with the higher testing opium.

The difference between the United States Pharmacopœia and the British Pharmacopœia assay results is approximately 0.75%. It should, however, be noted that within the last couple years the assays of a number of lots of opium by the British Pharmacopœia method gave results only about 0.2% above the United States Pharmacopœia.

There is no question but that some morphine is held in solution by the solvents in the assay, but the basis for the magnitude of the correction was somewhat obscure, at least to us. It is very much larger than could be accounted for by the solubility of morphine in the solvents. An endeavor to find the basis for the magnitude of the correction and to account for it resulted in the work recorded below.

## EXPERIMENTS WITH MORPHINE.

The morphine used for the experiments was recrystallized twice from hot methanol and was in the form of well-defined, relatively large crystals. By titration it showed a purity of 99.93% as hydrated morphine. It was also free from non-phenolic alkaloids. The same morphine was used for all the subsequent experiments.

*U. S. P. Assay.*—1.050 Gm. of the morphine was dissolved in water and a slight excess of normal hydrochloric acid, the solution made up with water to 30 cc. and then assayed according

to the U. S. P. In a few of the tests the morphine was dissolved in meconic acid instead of hydrochloric acid.

*B. P. Assay.*—1.200 Gm. of the morphine was dissolved in water and a slight excess of normal hydrochloric acid, treated with lime and made up to 90 Gm.; 52 cc. of the filtered solution was then assayed according to directions of the B. P.

The results are shown in Table II.

In all the subsequent experiments with the U. S. P. or B. P. assay, the quantities of morphine just indicated were used.

TABLE II.—SERIES A—U. S. P. X METHOD.

| Per Cent Morphine Recovered. | | |
|---|---|---|
| 98.2 | 94.4 | 97.5 |
| 97.4 | 96.9 | 96.3 |
| 97.6 | 94.5 | 95.8 |
| 97.9 | 94.4 | |
| Average 96.44% | | |

| | |
|---|---|
| Average "loss" of anhydrous morphine per assay | 17.6 mg. |
| Average "loss" of anhydrous morphine per cc. of morphine-lime solution | 0.58 mg. |

TABLE III.—SERIES B—B. P. METHOD.

| Per Cent Morphine Recovered. | |
|---|---|
| Uncorrected. | Corrected. |
| 94.4 | 103.1 |
| 93.6 | 102.3 |
| 94.6 | 103.3 |
| 93.8 | 102.5 |
| 95.0 | 103.7 |
| 94.3 Av. | 103.0 Av. |

| | |
|---|---|
| Average "loss" of anhydrous morphine per assay | 37.6 mg. |
| Average "loss" of anhydrous morphine per cc. | 0.72 mg. |

(Three analysts participated in Series A, and two in Series B, C, D.)

Several of the assays in Series A are obviously too high. They are higher than would be expected even on the basis of only the theoretical solubility of morphine in the assay solvents. We attributed these high results to inclusion of titratable lime compounds with the precipitated morphine. The difference between the lowest and the highest results corresponds to only 2 mg. of calcium oxide or its equivalent of other titratable lime compounds.

TABLE IV.—SERIES C—U. S. P. X METHOD, BUT MORPHINE DISSOLVED IN HOT METHANOL.

| Per Cent Morphine Recovered. | | |
|---|---|---|
| 93.8 | 94.3 | 94.7 |
| 94.3 | 94.4 | 94.3 |
| 94.2 | 93.8 | |
| Average 94.2 | | |

| | |
|---|---|
| Average "loss" of anhydrous morphine per assay | 28.6 mg. |
| Average "loss" of anhydrous morphine per cc. | 0.95 mg. |

TABLE V.—SERIES D—B. P. METHOD, BUT MORPHINE DISSOLVED IN HOT METHANOL.

| Per Cent Morphine Recovered. | |
|---|---|
| Uncorrected. | Corrected. |
| 92.2 | 100.9 |
| 92.4 | 101.1 |
| 93.0 | 101.7 |
| 92.6 | 101.3 |
| 92.4 | 101.1 |
| 92.6 | 101.3 |
| 92.5 Av. | 101.2 Av. |

| | |
|---|---|
| Average "loss" of anhydrous morphine per assay | 49.8 mg. |
| Average "loss" of anhydrous morphine per cc. of morphine-lime solution | 0.96 mg. |

To eliminate interference from lime we ran another series of assays of the morphine by the U. S. P. and B. P. tests, but dissolved the precipitated morphine from off the filter with several portions of hot neutral methanol. To the methanol

solutions of the morphine a measured volume of tenth-normal sulphuric acid was added, then the solution diluted with about 2–3 volumes cold water, allowed to cool and the excess acid titrated with tenth-normal sodium hydroxide, using methyl red as the indicator. In some of the assays, where a larger volume of methanol had to be used, the greater part of it was evaporated off after dilution with water. In methanol-water solution the morphine titrated 99.93 and 100.10%.

The results of Series C and D, and especially C, are more concordant among themselves than in the corresponding Series A and B. It will also be noted that by dissolving in hot methanol the yields by both the U. S. P. and B. P. assays are about 2% lower than when the morphine is directly dissolved in standard acid.

Series C and D practically substantiate the validity of the correction of 1 mg. per cc. of morphine-lime solution. The question now was how to account for the large correction.

NOTE: In all the assays of morphine from here on, where lime was used the precipitated morphine was dissolved in hot methanol.

When an excess of the finely powdered morphine was shaken with water, alcohol and ether, in the proportions of the U. S. P. assay for opium 30 cc. of the filtered aqueous layer gave upon evaporation 10 mg. of anhydrous morphine. From 15 cc. of the ether about 1.5 mg. of morphine was obtained on evaporation.

Portions of 0.50 Gm. of the morphine were dissolved in 30 cc. of water with a slight excess of normal hydrochloric or meconic acid, 3.5 to 4 cc. of normal ammonia added and allowed to stand over night. This quantity of ammonia gives approximately the same excess of alkalinity as in the U. S. P. assay. The precipitated morphine, after filtering and washing with ice-cold water, was dissolved in tenth-normal $H_2SO_4$ and back titrated with 0.1*N* NaOH. The recoveries of morphine were 98.2, 97.7 and 98.0 per cent. Repeating the experiments in presence of 2 cc. alcohol and 15 cc. ether, as in the U. S. P. opium assay, 96.7, 97.2 and 97.0 per cent of the morphine were precipitated. These recoveries correspond to a loss of about 14 mg. of anhydrous morphine, leaving about an equal quantity of additional loss when assayed by the U. S. P. method to be accounted for.

Adsorption of morphine on the lime suggested itself as a likely cause for the increased loss. If this assumption were valid, less morphine should be adsorbed if less lime is used and vice versa. We accordingly made one assay of the morphine by the U. S. P. method, but using 2 Gm. of lime instead of 4 Gm.; and one assay by the B. P. method, but using 4 Gm. of lime instead of 2 Gm. In the former, there was about 1% increase in the quantity of precipitated morphine, in the latter an additional loss of about 1.5% was sustained. These results do seem to indicate adsorption of some morphine on the lime, but not sufficient to account for all the loss in excess of the normal solubility in the assay solvents. Moreover, the loss per cc. of lime-morphine solution, as shown in Tables IV and V, is the same for the U. S. P. and B. P. assay methods, notwithstanding the different quantities of lime used.

Many alkaloids are known to react with ammonium salts on heating, the alkaloid being converted into the salt of the anion of the ammonium salt used and ammonia liberated. We found that with morphine the same reaction takes place in an aqueous solution of ammonium chloride at room temperature. It was shown

before that practically 98% of the morphine was precipitated from its solution by ammonia. When the same experiments were made in the presence of 0.5 Gm. and 1 Gm. of ammonium chloride, the precipitation amounted to 96.4 and 95.3 per cent, respectively. When, in addition to the ammonium chloride, the precipitation was made in the presence of alcohol and ether in the proportions of the U. S. P. assay, the corresponding recoveries were 96.0 and 94.9 per cent. A summation of the foregoing results is presented in Table VI.

TABLE VI.

| | | Per Cent Morphine Recovered by Precipitation. |
|---|---|---|
| 1. | Aqueous solution precipitated with ammonia | 98.0 |
| 2. | Ditto, in presence of 0.5 Gm. ammonium chloride | 96.4 |
| 3. | Ditto, in presence of 1 Gm. ammonium chloride | 95.3 |
| 4. | As 1, but in presence of 2 cc. alcohol and 15 cc. ether | 97.0 |
| 5. | Ditto 4, but with 0.5 Gm. ammonium chloride | 96.0 |
| 6. | Ditto 4, but with 1 Gm. Ammonium chloride | 94.9 |

The effect of ammonium chloride on the amount of morphine precipitated was corroborated by assaying the morphine by the U. S. P. method, but using 0.5 Gm. of ammonium chloride instead of 1 Gm. The following table illustrates the results.

TABLE VII.

| 1 Gm. $NH_4Cl$. | 0.5 Gm. $NH_4Cl$. |
|---|---|
| 93.6 | 95.3 |
| 94.2 | 95.0 |
| 93.8 | 95.1 |
| 93.9 Av. | 95.1 Av. |

The foregoing data clearly indicate that the ammonium chloride is responsible for holding in solution about 2%, or at least about 10 mg., of morphine in the U. S. P. assay. They also disclose that 0.5 Gm. of ammonium chloride is ample for the precipitation of the morphine from the lime solution, and that with this quantity of ammonium chloride an increased precipitation of the morphine amounting to 1% or over, is obtainable. As a matter of fact, the Netherland Pharmacopœia uses 0.2 Gm. ammonium chloride for 2 Gm. of opium, which corresponds to 0.4 Gm. $NH_4Cl$ for 4 Gm. of opium in the U. S. P. assay.

Ammonium sulphate exerts a much smaller solvent effect than ammonium chloride. For instance, when 0.5 Gm. of morphine was dissolved in 30 cc. water with just sufficient sulphuric acid, 2 cc. alcohol and 1 Gm. of ammonium sulphate added and precipitated with 3.5 cc. of normal ammonia, 97.4% of the morphine was recovered.

The aqueous layers, exclusive of the washing, from several of the assays in Series C and D, as well as in similar experiments not reported here, were nearly saturated with sodium chloride and extracted with 4 to 6, 25-cc. portions of chloroform—alcohol mixture. The extract, after washing with a small quantity of water, was evaporated, the residue dissolved by warming with fiftieth-normal acid and the excess acid titrated with fiftieth-normal sodium hydroxide. From the mother liquor of the U. S. P. assays the alkaloid recovered ranged from 9 to 14 mg. with an average of 12 mg. corresponding to about 40% of the morphine "lost" in the assay.

From the B. P. assays the recovery ranged from 17 to 22 mg., also corresponding to about 40% of the unprecipitated morphine. From the aqueous mother liquors of the experiments summarized in Table VI, 80 to 85 per cent of the morphine held "in solution" was recovered, giving a total recovery of about 99%. We are unable yet to account for this phenomenon. The only difference between the two is the presence of some calcium chloride or possibly even some calcium hydroxide in the U. S. P. or B. P. assays.

On several occasions when the same assay of the morphine was repeated but at a different time, the results were more divergent than could be accounted for by the average error, notwithstanding that the errors in assaying pure morphine are to be expected to be greater than in many other types of quantitative determinations. It was suspected that the difference may be due to the difference in temperatures prevailing during the precipitation of morphine over night. The suspicion was corroborated, as shown in the following table, by running two sets of assays by the U. S. P. method. In one set the precipitation was allowed to take place at room temperature—about 28° C., and in the other at about 8° C.

TABLE VIII.—RESULTS SHOWING THE EFFECT OF TEMPERATURE ON RECOVERY OF MORPHINE.

| Per Cent Morphine Recovered. | |
|---|---|
| Temperature during Precipitation, about 28° C. | Temperature during Precipitation, about 8° C. |
| 93.6% | 95.7% |
| 94.5 | 95.5 |
| 93.4 | 95.8 |
| 93.8 Av. | 95.7 Av. |

In average laboratories such variations in temperature do not, of course, obtain, but a 10° difference between the winter and summer is not at all uncommon, and the same assay made at 20° and 30° C. may show a variation of about 1%.

We believe that the markedly lower recoveries at the higher temperature is primarily due to the greater solubility exerted by the ammonium chloride at that temperature.

It has been indicated in the literature that in the assay of opium, and especially so by the lime method, small quantities of other alkaloids, notably codeine, are co-precipitated with the morphine. We have found this to be the case in a number of samples of opium we examined. The results are recorded later on. The effect of the presence of other alkaloids on the precipitation of pure morphine was determined by assaying a "composition opium" by the U. S. P. method, after dissolving it in either hydrochloric or meconic acid. The "composition opium" for each assay was made up of 1.050 Gm. of morphine, about 0.4 Gm. of narcotine, 0.1 Gm. of codeine, about 0.08 Gm. papaverine, 0.07 Gm. of thebaine and about 0.2 Gm. of morphine free tar obtained in the process of manufacture of morphine. The proportions of the other alkaloids corresponds, approximately, to those present in average opium.

The results are on the average about 1% higher than those obtained with morphine alone (compare Table IV).

Morphine, like most other alkaloids, is "salted" out by sodium chloride or sulphate. If in the assay of morphine, in the form of hydrochloride or meconate,

TABLE IX.—SERIES E—"COMPOSITION OPIUM" ASSAYED BY U. S. P. X METHOD.

| Per Cent Morphine Recovered. | |
|---|---|
| 95.6 | 95.6 |
| 94.8 | 95.8 |
| 95.2 | 95.4 |

Average 95.4

by the U. S. P. method the morphine-lime solution is saturated with sodium chloride before precipitation with ammonium chloride, the amount of morphine precipitated is about 1.5% higher than without sodium chloride. We also observed, however, that saturation with sodium chloride in the assay of "Composition opium" also precipitates a somewhat greater proportion of the by-alkaloids.

### EXPERIMENTS WITH OPIUM.

*Effect of Methanol.*—Several samples of opium were assayed by the U. S. P. method and also by the modification of dissolving the precipitated morphine in hot methanol, etc., as described under pure morphine. The results were as follows:

TABLE X.—EFFECT OF DISSOLVING THE PRECIPITATED MORPHINE IN METHANOL.

| | Per Cent Anhydrous Morphine. | |
|---|---|---|
| | U. S. P. Assay Not Dissolved in Methanol. | U. S. P. Assay Dissolved in Methanol. |
| Opium No. 7 | 15.07 | 14.74 |
| Opium No. 8 | 12.83 | 12.58 |
| Opium No. 21 | 12.04 | 11.80 |

On the basis of the morphine contents the difference is about 2%, practically the same as obtained with morphine.

*Effect of Ammonium Chloride.*—The effect of using only 0.5 Gm. of ammonium chloride in the assay of opium instead of 1 Gm. is shown in the following tabulation. In both sets of assay the precipitated morphine was dissolved in methanol.

TABLE XI.—PER CENT MORPHINE FOUND.

| | 1 Gm. of Ammonium Chloride. | 0.5 Gm. of Ammonium Chloride. |
|---|---|---|
| Opium No. 7 | 14.82 | 15.05 |
| Opium No. 8 | 12.63 | 12.96 |
| Opium No. 21 | 12.08 | 12.21 |

*Effect of Temperature.*—The effect of the temperature on the amount of morphine precipitated in assaying opium practically confirmed the results found with morphine. Two samples of opium precipitated at a temperature of 28–30° C. gave 15.25 and 11.85%, but when the precipitation was made at about 8° C. the percentages of morphine were 15.35 and 12.03%.

*Co-precipitated Alkaloids.*—In the experiments with "composition opium" described under morphine, an increased yield of about 1%, due to the precipitation of by-alkaloids, was obtained. The by-alkaloids co-precipitated with morphine in the opium assay is considerably greater. For the determination of the co-precipitated alkaloids, the morphine solution, after titration was treated with 10 cc. of 5% sodium hydroxide and shaken out with several portions of chloroform. The combined chloroform extracts were shaken with small quantities of water to remove any free alkali, filtered and evaporated nearly to dryness. A measured volume of fiftieth-normal sulphuric acid was added, warmed until the residue was dissolved and the odor of chloroform dissipated, cooled and then the excess of acid titrated with fiftieth-normal sodium hydroxide using

methyl red as the indicator. The percentages of other alkaloids thus found, calculated as morphine, are shown in the following table.

TABLE XII.—OPIUM BY-ALKALOIDS CO-PRECIPITATED WITH THE MORPHINE.

| | Per Cent Anhydrous Morphine U. S. P. Assay. | Per Cent Non-phenolic Alkaloids Co-precipitated with the Morphine. | Per Cent Non-phenolic Alkaloids on the Basis of the Morphine. |
|---|---|---|---|
| Opium No. 11 | 15.20 | 0.45 | 2.96 |
| Opium No. 12 | 12.42 | 0.34 | 2.74 |
| Opium No. 12-A | 14.76 | 0.53 | 3.59 |
| Opium No. 13 | 15.06 | 0.45 | 2.99 |
| Opium No. 16 | 14.64 | 0.39 | 2.67 |
| Opium No. 18 | 12.58 | 0.35 | 2.78 |
| | | 0.42 Av. | 2.96 Av. |

These determinations represent only the non-phenolic by-alkaloids. Opium contains also several phenolic alkaloids other than morphine. If they should be present in appreciable quantities they will probably be co-precipitated with the morphine, and the extraction of the sodium hydroxide solution of the alkaloids with chloroform would not eliminate them.

Shaking out of the aqueous mother liquor from several of the opium assays with chloroform-alcohol, after saturation with sodium chloride, yielded from 8 to 13 mg. of morphine, with an average of 11 mg. This recovery is practically identical with that obtained from the aqueous mother liquor in the assays of morphine.

Within the last two or three years a new type of assay for opium has been advanced, the essential features of it being the following. The aqueous or acid extract of the opium is treated with an excess of sodium hydroxide solution and shaken out with an immiscible solvent such as chloroform. Non-phenolic alkaloids are thus removed. The alkaline solution holding the morphine is acidified with HCl, then made alkaline with ammonia and shaken out with a suitable solvent. The second shaking out extracts the morphine which after evaporation of the solvent is titrated.

An assay of this type, which we would designate as "Assay by immiscible solvents" is due to Buchbinder, formerly of the Bureau of Chemistry. He uses chloroform-alcohol for the extraction of the morphine from the ammoniacal solution. Assaying morphine, in hydrochloric acid solution, by the Buchbinder method we recovered 98.4 and 97.1%. We also assayed four samples of opium by the same method. The results compared with those obtained by the regular U. S. P. method were as follows:

TABLE XIII.

| | U. S. P. Method. | Buchbinder Method. |
|---|---|---|
| Opium No. 53 | 11.93 | 12.15 |
| Opium No. 65 | 14.20 | 14.51 |
| Opium No. 69 | 13.62 | 13.90 |
| Opium granular | 10.50 | 11.01 |

The Buchbinder method gives a slightly higher test than the U. S. P. method. This may be due to the fact that in the Buchbinder method an aliquot portion is taken from a solution in which there is present the insoluble matter from the opium, barium sulphate derived from barium chloride used in the assay, etc.

Another "assay by immiscible solvents" has been proposed by Eder and Stucki. They digest the opium first with normal hydrochloric acid, claiming that the acid liberates more morphine, and use a mixture of chloroform and isopropanol for both removing the non-phenolic alkaloids as well as for the extraction of the morphine.

The "assays by immiscible solvents" have, *first*, the important advantage that no correction for solubility of morphine is necessary, and *second*, the isolated morphine is not contaminated with non-phenolic alkaloids, although other phenolic alkaloids may be included as morphine. These assays have, however, one great disadvantage. On account of the limited solubility of morphine in the solvents only a small quantity of opium, 1 or 2 Gm., can be used for the assay. Such a small sample could not be well representative of the opium, especially when dealing with Gum Opium. We believe, however, that the above proposed assays for opium by immiscible solvents have laid the ground work for further investigation which we hope will result in perfecting the method and making it of practical use.

## SUMMARY.

Dissolving the morphine, obtained in the lime assays, in hot methanol before titration eliminates, on the basis of the morphine contents, about 2% of foreign titratable substances calculated as morphine.

Assays of pure morphine by the U. S. P. and B. P. methods confirm the "assay-loss" of practically 1 mg. of morphine for each cc. of lime-morphine solution as indicated in the latter Pharmacopœia. This "loss," however, will fluctuate somewhat unless definite and uniform conditions are maintained in the assay.

About one-half of the assay loss is attributable to the solubility of morphine in the assay solvents. The greater part, if not all, of the balance of the "loss" is caused by the solvent action of the ammonium chloride on morphine. Adsorption on the lime may also be responsible for a small portion of the assay-loss.

It therefore follows, and it has been confirmed by experiment, that the larger the quantity of ammonium chloride used the greater will be the quantity of morphine dissolved. By using 0.5 Gm. of ammonium chloride in the U. S. P. assay, 1 to 1.5 per cent more morphine was precipitated than when 1 Gm. was used.

The temperature during precipitation of the morphine in the lime assays affects the quantity of morphine held in solution. When precipitation takes place at 28°–30° C. about 2% more of the morphine is dissolved than at 8° C. We attribute the increased solubility largely to the greater solvent action of the ammonium chloride at the higher temperature.

It is recommended: (1) that in the U. S. P. assay 0.5 Gm. of ammonium chloride be used instead of 1 Gm. This quantity, 0.5 Gm. is several times the theory for a 15% opium; and (2) that the temperature of precipitation (standing over night) be restricted to about 10° C.

Saturation or near-saturation of the lime-morphine solution with sodium chloride before adding the ammonium chloride raises 1 to 2 per cent the quantity of the morphine precipitated. In the case of opium, however, the use of sodium chloride will also increase the co-precipitation of the by-alkaloids.

The morphine precipitated in the U. S. P. and probably also in other lime assays carries about 3% non-phenolic by-alkaloids which is included in the assay as

morphine. Since opium contains also other alkali-soluble alkaloids than morphine, these, if present in appreciable quantities, may also be included with the morphine and thus show an apparent higher morphine content. Pharmacopœias applying a correction for "assay-loss" should, as a matter of scientific accuracy and of fairness to the manufacturers of morphine and its derivatives, who consume 90% or more of the total legitimately used opium, take cognizance of the occlusion of by-alkaloids in the morphine and make the necessary correction.

By coincidence of counterbalancing error factors, the U. S. P. assay of opium appears to indicate very closely the true morphine content.

The "total extraction" of the opium which has been practiced in the assay by the several revisions of the U. S. P. is an important point in its favor. It obviates errors in aliquot portions due to the variable amounts of water and insoluble matter in the opium. In the assay method under consideration by the Committee of the League of Nations, published elsewhere, these sources of "inaccuracies" are corrected for by making separate determinations of the water content of the opium, and of the total extractive matter.

Corrections, almost of any kind, are looked upon with disfavor in analytical procedures. They are most uncertain and most undesirable when the corrections involved are of appreciable magnitude.

Assays based on the isolation of the morphine, free from by-alkaloids, through the use of immiscible solvents offer a possible solution of the problem provided they can be worked with reasonably large samples. They should also strive to avoid such aliquots as may introduce any element of error, and, *ipso facto*, should not require an undue length of time.

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## GELATIN AS A STABILIZING COLLOID FOR OIL IN WATER EMULSION SYSTEMS.*

BY LINWOOD F. TICE.[1]

Various workers have investigated the efficiency of gelatin as an emulsifying agent. Briggs and Schmidt (1) found gelatin to be comparatively inefficient as an emulsifying agent. Clayton (2) reported drop numbers for cottonseed and peanut oils in aqueous gelatin solutions which indicated that gelatin possessed considerable ability to reduce the interfacial tension between oil and water. Holmes and Child (3) studied the effect of added electrolytes upon the emulsion system kerosene, gelatin and water and concluded that the important factor was the conferring of a favorable viscosity to the gelatin solution. Kernot and Knaggs (4) using the Donnan pipette measured the drop numbers of various oils against gelatin solutions. Limburg (5) showed that a lowered $p_H$ favors the adsorption of gelatin around oil globules.

In reviewing the results of these workers it is very difficult for one to reach any definite conclusions as to the exact status of gelatin as a practical emulsifying agent. The following criticism may be advanced concerning these results:

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* Scientific Section, A. PH. A., Portland meeting, 1935.

[1] Department of Research, Philadelphia College of Pharmacy and Science. Investigation conducted in behalf of the Edible Gelatin Manufacturers' Research Society of America, Inc.

I. The use of the drop number of an oil against some solution, although of considerable indicative value, cannot be taken as conclusive evidence in regard to the emulsion stabilizing ability of such a solution.

II. In no case was really effective emulsification of commonly used oils, *e. g.*, cod liver oil, heavy mineral oil, etc., actually accomplished. Such emulsions as were produced were of theoretical interest but they possessed no practical value.

III. Such inefficient methods of dispersion were employed that there exists considerable doubt as to the real meaning of the results.

It must be realized that a substance may be an excellent stabilizer in an emulsion system, effectively reducing the interfacial tension between the two phases, but at the same time due to its physical properties it may not favor the easy dispersion of the phase to be dispersed. Consequently, using crude methods of dispersion one is apt to obtain misleading results as to the true stabilizing power of an emulsifying agent.

When a highly efficient device which insures an initially highly disperse emulsion is employed then the real ability of a substance to stabilize the system can be determined.

The object of this investigation was to determine the efficiency of gelatin as an emulsion stabilizing colloid, the specifications under which it is most effective for such use, and lastly, if possible, to submit practical working formulas in which gelatin might be employed as the emulsifying agent.

## COLLECTION OF MATERIALS.

Samples of every type and grade of gelatin were obtained from several of the largest manufacturers of this product. All the data concerning the method of manufacture and the control reports were submitted with each sample.

The next step was the investigation of emulsifying devices in order to obtain the most efficient unit available. The importance of such an investigation has already been explained, namely, to eliminate all possibility of misleading results due to inefficient mechanical treatment.

Several colloid mills were examined and the degree of dispersion accomplished by each noted. Then a laboratory homogenizer manufactured by Manton-Gaulin was studied. The results were as follows: Among the colloid mills there is a wide difference in their relative efficiencies. The homogenizer, however, for liquid emulsions provided the best degree of dispersion and the greatest uniformity of product. It is true that colloid mills are not as cumbersome and are more generally applicable for other uses than the homogenizer, but for liquid emulsions they did not prove as satisfactory.

Furthermore, gelatin being strongly adsorbed and probably preferentially so at a water/air interface, the homogenizer which almost entirely excludes air was thought to be more satisfactory for the preparation of emulsions containing gelatin.

Having now decided upon the method of dispersion to be used and having available every possible type of gelatin, the actual experimental work was begun.

## EXPERIMENTAL PART.

The experimental method chosen was the preparation of emulsions of heavy liquid petrolatum containing in each case 50 per cent of oil, the dispersion medium

being aqueous gelatin solutions in which the type of gelatin, its concentration and the $p_H$ of the solution were the factors varied. In each case the mixed phases were homogenized at a pressure of approximately 3500 lbs. The results are tabulated below.

| | Concentration. | $p_H$. | Condition of Emulsion. |
|---|---|---|---|
| A—Bone Gelatin, 200 Bloom. | | | |
| 1 | 0.5% | 5.8 | Poor |
| 2 | 1.0% | 5.8 | " , gel formation |
| 3 | 1.0% | 4.0 | " " " |
| 4 | 1.0% | 3.0 | " slight gel formation |
| 5 | 1.0% | 7.0 | " " " " |
| B—Calfskin Gelatin, 200 Bloom. | | | |
| 1 | 0.5% | 6.1 | Poor |
| 2 | 1.0% | 6.1 | " , gel formation |
| 3 | 1.0% | 4.0 | " " " |
| 4 | 1.0% | 3.0 | " slight gel formation |
| 5 | 1.0% | 7.0 | " " " " |
| C—Porkskin Gelatin, 250 Bloom. | | | |
| 1 | 0.5% | 4.6 | Fair |
| 2 | 1.0% | 4.6 | Good, gel formation |
| 3 | 1.0% | 4.0 | " " " |
| 4 | 1.0% | 3.0 | Excellent |
| 5 | 1.0% | 7.0 | Poor, gel " |
| D—Porkskin Gelatin, Isoelectric. | | | |
| 1 | 0.5% | 8.0 | Poor, slight gel formation |
| 2 | 1.0% | 8.0 | " gel formation |
| E—Bone Gelatin, Isoelectric. | | | |
| 1 | 0.5% | 4.7 | Poor, slight gel formation |
| 2 | 1.0% | 4.7 | " gel formation |

From the above results it will be seen that the behavior in the case of C—4 was outstandingly good. These results were checked and it was found that a porkskin gelatin at a $p_H$ of 3 gave an excellent, highly dispersed emulsion.

Upon the basis of these results the following explanation was derived which seems to provide a sound theoretical reasoning on which basis the above behavior can be interpreted.

Bone and calfskin gelatin are derived following a preliminary liming treatment of the precursor. The excess lime is removed by washing and acid washing followed by partial hydrolysis and extraction of the highly purified collagen by heating with water. In the case of porkskin gelatin, fresh frozen porkskins are treated with acid in the initial stage, followed by partial hydrolysis and extraction of the collagen. It is already known (6) that gelatin derived from alkali-treated precursors and gelatin obtained from an acid-treated precursor have quite different isoelectric points, the former having an isoelectric point at a $p_H$ of 4.7 and the latter having an isoelectric point falling at a $p_H$ of approximately 8.

As the $p_H$ of a gelatin solution is lowered from its isoelectric point the gelatin becomes positively charged, such charge increasing with lower $p_H$ levels, according to the equilibrium positive gelatin $\rightleftarrows$ isoelectric gelatin $\rightleftarrows$ negative gelatin.

Oil globules dispersed in water have been shown to be negatively charged which is as would be expected inasmuch as the dielectric constant of oil is lower than that of water.

Therefore, in order to encourage the adsorption of gelatin at an oil/water interface the greater the charge the more readily should such adsorption take place.

Starting with a gelatin from a limed precursor whose isoelectric point lies at 4.7 it will readily be seen that in order to confer on it highly positive properties a much lower $p_H$ is needed than would be required by a gelatin from an acid-treated precursor having an isoelectric point at a $p_H$ of 8. This seems to be a logical explanation of the superiority of porkskin gelatin in stabilizing an emulsion over bone or calfskin gelatin at the $p_H$ of 3.

It was evident that if this reasoning were correct bone and calfskin gelatin at a still lower $p_H$, say approximately a $p_H$ of 1, should make possible equally satisfactory emulsions as those given by porkskin gelatin at the higher $p_H$. This was definitely borne out experimentally.

Another difficulty using ordinary bone or calfskin gelatin is that, at ordinary $p_H$ levels, if sufficient gelatin is used to provide the necessary concentration gelation of the product results. With porkskin gelatin this tendency is very much reduced, and at a $p_H$ of 3 gelation of even 1% solutions is almost entirely prevented. The reason for this difference is explained by the fact that the degree of hydration of gelatin is proportional to the differential between its $p_H$ and that at its isoelectric point. The degree of hydration of a porkskin gelatin at a $p_H$ of 3 would consequently be expected to be considerably more than that present in a bone or calfskin gelatin at that same $p_H$.

Although emulsification is quite efficient at a $p_H$ of 1 with bone and calfskin gelatin, for most purposes at least this $p_H$ level contributes too great an acidity to the product and for emulsions to be taken internally the use of porkskin gelatin at a $p_H$ of 3 is recommended.

Porkskin gelatin as sold upon the market has a $p_H$ of 4.0–4.6. Consequently, an adjustment of the $p_H$ level is necessary before it may be used in the preparation of such emulsions. In the above experiments such adjustments were made on the basis of a graph on which the ordinates were the cc. of tenth-normal hydrochloric acid added per 100 cc. of 1% gelatin and the abscissæ the resulting $p_H$ levels. Between the extremes $p_H$ 4.6 and $p_H$ 3 the plotted points produced practically a straight line and it was found that with various lots of gelatin of the same type, knowing their initial $p_H$, it was possible within reasonable limits to calculate by proportion the required amount of acid that should be employed.

It was thought, however, that for the practical worker it would be much easier to adjust the $p_H$ with tartaric acid. Tartaric acid being a quite pure and uniform crystalline substance, the addition could then be made on a weight basis. A graph was prepared in which the milligrams of tartaric acid added per 100 cc. of 1% gelatin was represented as the ordinates, the abscissæ being the observed $p_H$ levels of such solutions. Such a graph is illustrated (Fig. 1).

Emulsions were made using the proper amount of tartaric acid to provide a $p_H$ of 3. Such emulsions, however, seemed considerably more acid to the taste than similar emulsions made with gelatin whose $p_H$ was adjusted with hydrochloric acid. The reason for this may be that some tartness lies in the undissociated

tartaric acid molecules, such tartness being an inherent property of these molecules to the taste. Fortunately, it was found that at a $p_H$ of 3.2, where only three-fifths as much tartaric acid was required, emulsification was satisfactory and the gelation tendency sufficiently depressed by the added liquefying effect of the tartrate that gelation did not occur. Consequently, if the $p_H$ is adjusted by the use of hydrochloric acid the level should be 3; if tartaric acid is used a level of 3.2 is most satisfactory.

Alcohol, in moderate amounts, sugar and glycerin were found to be compatible with gelatin in emulsion formulas. In fact, the last two seemed to actually exert a favorable influence on the resulting product.

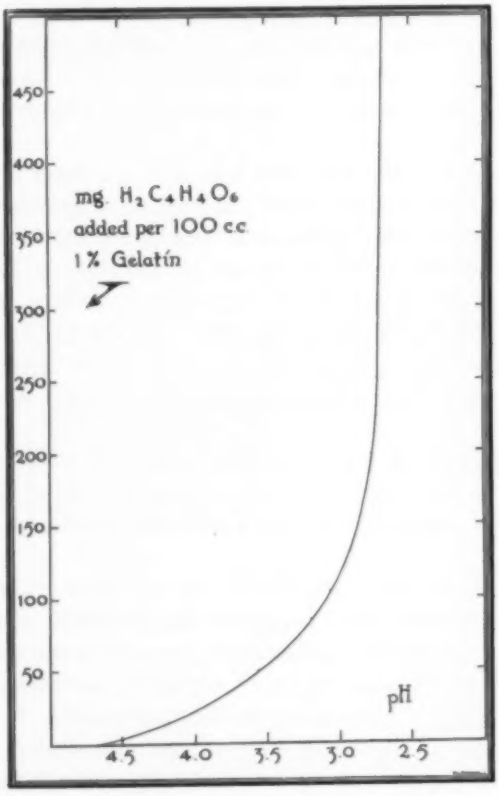


Fig. 1.

Various samples of experimental emulsions were aged to determine their stability; others were placed in a refrigerator and a third lot were subjected to oven temperatures of approximately 45° C.

The result of several months' aging at room temperatures is a very slight creaming and a gradual loss in viscosity. The extent of creaming is considerably less than many comparable commercial emulsions. The gradual loss in viscosity was not unexpected as, under such conditions, a slow hydrolysis of the gelatin protein is of course unavoidable. The degree of dispersion and condition of emulsification remained excellent.

Those emulsions placed in the refrigerator became somewhat thick and viscous but no actual solidification took place. It was in some cases necessary to shake the bottle before pouring, due to the formation of a thin surface film which, however, was easily broken on shaking.

A very interesting phenomenon was observed with emulsions placed in the oven at 45° C. When such emulsions were made with hot gelatin solutions and subsequently cooled they were perfectly stable. On the other hand, when made with cold gelatin solutions the emulsions after being kept in the oven showed a slight separation of oil, which separation, however, was not continuous. There are two possible explanations seen for this—first, it may be that the sol $\rightleftarrows$ gel change due to change in temperature may cause a certain amount of dispersed oil to separate when made in the cold and then warmed, or secondly, the cold gelatin solution may, due to its greater viscosity, entrap air, this entrapped air at the same time enclosing oil globules. Upon heating, the air being expelled a certain small amount of un-

emulsified oil is liberated. This latter explanation seems the more probable of the two. At any rate, such a defect is overcome by using a hot gelatin solution in producing the emulsion.

Realizing that a slow hydrolysis of gelatin might in time entirely destroy its stabilizing influence, the following experiment was carried out: A 5% solution of gelatin at a $p_H$ of 3 was heated at 100° C. for 3 hours. At the end of this time it had lost all power of gelation and it was, when cold, quite limpid, yet it still quite effectively retained its power to stabilize an emulsion containing 50 per cent mineral oil. Of course, the hydrolysis had not yet completely formed the underlying aminoacids, although doubtlessly it was considerably progressed. This experiment gave good evidence that although hydrolysis would unavoidably lessen the viscosity it should not be expected to disrupt the emulsion system through total loss of stabilizing influence.

It may be mentioned here that loss in viscosity, although it accelerates slightly the rate of creaming, is not nearly as undesirable as an increase in viscosity upon aging. In the latter case, actual solidification may occur whereupon pouring may become impossible.

A comparison of relative efficiencies of low and high Bloom gelatins showed conclusively that the higher Bloom gelatins are to be preferred in emulsion work. Consequently, porkskin gelatin, for example, was selected having a Bloom rating of at least 250 Gm. No difficulty should be experienced in obtaining such a Bloom strength gelatin of the porkskin type, although with bone and calfskin gelatin a product of this high a Bloom rating is not usually marketed.

There are several advantages to be obtained by the use of gelatin as an emulsifying agent.

I. It is an excellent stabilizer.

II. It possesses unusual economy due to both its low cost and the small amount required. It was calculated that for one gallon of emulsion the cost of gelatin required would be less than three cents.

III. For emulsions to be administered internally it greatly reduces the calorific intake as compared with acacia. Furthermore, being very easily digestible it is less disturbing in cases of gastro-intestinal disorders.

IV. In technical emulsions it eliminates the presence of the, in many cases, undesirable gum and permits the preparation of highly fluid yet slightly acid emulsions.

The only possible disadvantages encountered are first, the necessity of a homogenizer, and second, the gradual loss in viscosity of the finished product.

The first disadvantage is meaningless on a large scale as most manufacturing organizations possess such equipment. On a small scale there are now available numerous quite inexpensive hand homogenizers (7) which make possible the use of gelatin, *e. g.*, by the prescription pharmacist.

It may be mentioned that the new United States Pharmacopœia has its text so worded that gelatin may be used in official emulsions replacing acacia.

## PRACTICAL APPLICATIONS.

Some formulas using gelatin as the sole emulsifying agent are presented in order to illustrate the practicability of its use.

A.

| | | | |
|---|---|---|---|
| I | Gelatin (0.6% porkskin, 250 Bloom) | 6.0 | Gm. |
| | Tartaric acid *or* | 0.450 | Gm.* |
| | (Hydrochloric acid *q. s.*) | | |
| | Syrup | 100.0 | cc. |
| | Water *q. s.* | | |
| | To make | 440.0 | cc. |
| II | Vanillin | 0.035 | Gm. |
| | Alcohol | 60.0 | cc. |
| III | Heavy mineral oil | 500.0 | cc. |
| | To make about | 1000.0 | cc. |

Add the gelatin and tartaric acid to about 300 cc. of cold water, allow to stand a few minutes, then heat until dissolved. Add the syrup and finally enough water to make 440 cc. (I). While still quite warm add II, then III, and mix well avoiding the inclusion of air. Finally, homogenize and bottle. Homogenization should be repeated if necessary until all the oil is completely dispersed.

Such an emulsion conforms to the new U. S. P. XI monograph for Emulsion of Liquid Petrolatum.

B.

| | | | |
|---|---|---|---|
| I | Gelatin (0.5% porkskin, 250 Bloom) | 5.0 | Gm. |
| | Tartaric acid *or* | 0.375 | Gm.* |
| | (Hydrochloric acid *q. s.*) | | |
| | Methyl parahydroxy-benzoate | 2.0 | Gm. |
| | Water *q. s.* | | |
| | To make | 500.0 | cc. |
| II | "Lemon Oil" | 250.0 | cc. |
| | Light mineral oil | 250.0 | cc. |
| | To make about | 1000.0 | cc. |

The directions here are similar to those in "A." Methyl parahydroxy-benzoate replaces the alcohol as a preservative. Such a formula provides an excellent furniture polish emulsion.

In preserving emulsions made with gelatin the only organisms that can develop at such a $p_H$ are the molds and yeasts. All proteolytic bacteria are inactivated by the acidity. Consequently, the problem of preservation is no more complicated than that arising from the use of any carbohydrate emulsifier as, for example, acacia.

SUMMARY.

I. Gelatin is a very efficient stabilizing colloid for oil-in-water emulsion systems.

II. The important factors to be considered in connection with gelatin for this purpose are first, the preliminary treatment received by its precursor (which determines its isoelectric point) and second, the $p_H$ of the solution to be used.

III. Gelatin from acid-treated precursors, having an isoelectric point at $p_H$ 8, requires a $p_H$ of approximately 3 to effectively stabilize an emulsion, whereas gelatin

* The amount of tartaric acid may vary slightly depending upon the gelatin used. If hydrochloric acid is used, the amount necessary to give a $p_H$ of 3 must be determined by experiment. If a thinner emulsion is desired 5 Gm. of gelatin may be used instead of 6 Gm.

from alkali-treated precursors, having an isoelectric point at $p_H$ 4.7, requires a $p_H$ of approximately 1.

IV. The advantages of gelatin for use in emulsions are enumerated.

V. The efficiency of several colloid mills as compared with that of a homogenizer in preparing liquid emulsions is reported.

VI. Practical formulas and directions for the use of gelatin in emulsions are presented.

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## A NOTE ON THE ACTION OF ALKALIES AND ALKALI SALTS ON ANTIPYRINE.*[1,2]

BY LOYD E. HARRIS AND ERCELL D. TEBOW.

A prescription that called for a solution of antipyrine in a concentrated solution of potassium citrate was brought to the laboratory for an explanation. A colorless liquid separated which disappeared on dilution of the mixture with water. Or, on standing, it gradually changed to a crystalline substance. A search of the literature gave no information as to what was happening, so the problem was investigated in the laboratory.

### EXPERIMENTAL.

A few grams of the liquid precipitate were obtained by adding antipyrine to a saturated aqueous solution of potassium citrate. This was separated by using a separatory funnel. Crystals began forming after standing a few hours and in about 48 hours the mass was completely crystallized. The crystals resembled antipyrine in physical appearance and the melting point was found to be 111° C. which is the same as the U. S. P. compound. A mixed melting point with antipyrine did not cause any change. The U. S. P. X color tests were positive, thus, further indicating that the crystals were antipyrine.

A saturated alcoholic solution of picric acid was added to a boiling aqueous solution of the immiscible liquid. Almost immediately, long yellow crystals began to appear. After washing with water and drying, their melting point was determined to be 188° C.; antipyrine picrate was prepared in a similar manner and its melting point was the same.

A second portion of the aqueous solution of the immiscible liquid was made acid with hydrochloric acid (no change was apparent in the dilution used) and then sodium nitrite was added. The green precipitate, which formed, was separated by filtration, washed with water and then dried. The melting point was 200° C. and corresponds to the melting point of nitroso antipyrine, prepared in the laboratory.

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* Scientific Section, A. PH. A., Portland meeting, 1935.

[1] An abstract from a Thesis submitted by Ercell Dale Tebow to the Graduate Faculty, University of Oklahoma, in partial fulfilment of the requirements for the degree of M.S. in Pharmacy, 1933.

[2] From the Pharmacy Laboratory, School of Pharmacy, University of Oklahoma.

Portions of the immiscible fluid obtained from each of the alkalies and alkali salts used were burned, in separate evaporating dishes, at temperatures less than red heat. There was no ash or residue, except in one instance (this was probably due to incomplete separation of the liquids).

The liquid separated and came to the top when antipyrine was mixed with alkali salts, but with sodium hydroxide and potassium hydroxide, in a few instances, it settled to the bottom. This was apparently due to the different specific gravities; the specific gravity of the separated immiscible liquid was found to be 1.0965 at 25° C.

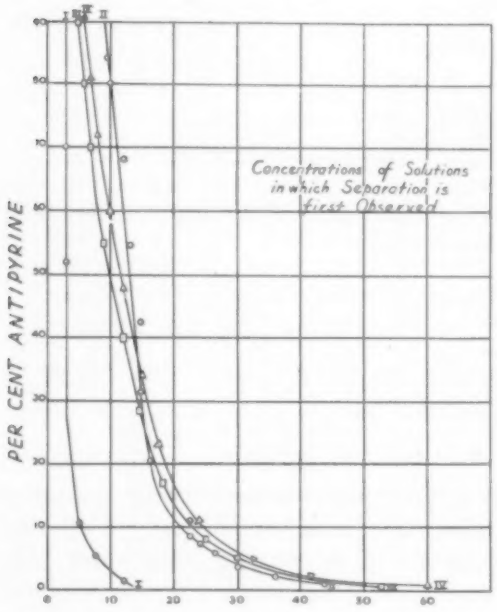


Fig. 1.—Per cent: I, sodium hydroxide; II, potassium hydroxide; III, sodium citrate; IV, potassium citrate.

Crystals formed almost immediately when potassium hydroxide and sodium hydroxide were used, but with potassium citrate and sodium citrate the fluid would frequently remain liquid for several days.

The percentages of alkali and antipyrine were determined at which the immiscible liquid started to separate. In determining the sodium citrate, potassium citrate and antipyrine, the percentages were calculated from the amount of water used and not the total volume of the solution. Due to the hygroscopic nature of potassium hydroxide and sodium hydroxide, they were weighed and dissolved in enough water to make a definite volume and the percentages calculated. Equal amounts of antipyrine were placed in test-tubes, a measured amount of water added and, after it had dissolved, the alkali or alkali salt solution was added from a second burette, shaking after each 0.2 cc., until separation was noticed. The percentage of each was then calculated from the total amount of liquid added. The results are presented in graph form.

A number of other alkali salts were tested qualitatively to see if they would produce similar results on solutions of antipyrine. Each caused the separation into two immiscible layers. The salts used were sodium bicarbonate, sodium acetate, sodium carbonate, sodium thiosulphate, potassium bicarbonate, potassium carbonate, potassium acetate, ammonium acetate and ammonium carbonate.

### CONCLUSIONS.

From the foregoing facts, it is believed that the immiscible liquid obtained by the addition of antipyrine to concentrated solutions of alkalies or alkali salts is an isomeric form, which will change to the usual crystalline form on standing.

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## QUANTITATIVE ANALYSIS OF BARBITURIC ACID DERIVATIVES.

BY KAZIMIERS KALINOWAKI, UNIV. OF POZNAN.

To a solution of 0.2–0.3 Gm. of the substance to be analyzed in 20–25 mils of acetone, or 30–36 mils of ethyl alcohol, 15–20 mils of a normal solution of NaOH and 20–30 mils of water are added. This clear solution is titrated with a 0.1*N* solution of $AgNO_3$ until a turbidity is obtained. As this method is simple and accurate to 0.1 per cent, its use is adapted to pharmaceutical laboratories.—*The Pharmaceutical Journal*, August 31, 1935.

## PHYTOCHEMICAL NOTES.

### No. 112. The Sterols of Achillea Millefolium.*

BY OLE GISVOLD.

In the course of the chemical investigation of milfoil by Katherine Graham (1) a sterol melting at 134–135° had been isolated. Its acetate melted at 123–124°. However, the melting points were not very sharp. A study of the original literature on sterols seemed to indicate that the product might be a mixture rather than a chemical individual.

In order to resolve this sterol mixture, if such it should prove to be, into its components, the acetates were brominated according to Windaus and Hauth (2). When, however, upon standing no separation had taken place, crystallization was induced by the addition of a little alcohol. From the crystals thus obtained, the ether-soluble material was removed by washing. The insoluble residue melted at 203°. Apparently, it may be regarded as the tetrabromide of stigmasterol acetate. The amount obtained was too small to render debromination practicable.

As for the melting point, Windaus and Hauth (2) record 211° as the melting point of stigmasterol acetate tetrabromide. However, melting points of 205° (3), 208° (4) and 210° (5) are also recorded. Moreover, H. Sandqvist and J. Gorton (6), as late as 1930, report 203° as the melting point.

Before attempting the debromination of the ether-soluble brominated sterol acetate, the technique (2) was tried out on the corresponding cholesterol derivative. The attempt was unsuccessful because the zinc dust suspended in the glacial acetic acid coagulated. When absolute alcohol was substituted for glacial acetic acid, the experiment was successful. With this substitution in the technique, the ether-soluble brominated sterol acetate was successfully debrominated. After several recrystallizations, the debrominated acetate melted at 127.5°. Upon saponification the free sterol was obtained melting at 138°. These constants agree with those of sitosterol. Apparently, therefore, the sterol isolated from milfoil is a mixture of stigmasterol and a sitosterol in which the latter predominates.

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OFFICERS-ELECT, AMERICAN PHARMACEUTICAL ASSOCIATION FOR 1936–1937.

The Board of Canvassers of the American Pharmaceutical Association, composed of Gustav Bachman, *Chairman;* Charles V. Netz, and Charles H. Rodgers, all of Minneapolis, Minn., has announced as the result of the mail ballot for the officers of the Association, the election:

*President-Elect,* George D. Beal, Pittsburgh, Pa.

*First Vice-President Elect,* J. Leon Lascoff, New York, N. Y.

*Second Vice-President Elect,* James C. Munch, Glen Olden, Pa.

*Members Elect of the Council:* H. C. Christensen, Chicago, Ill; R. P. Fischelis, Trenton, N. J.; Ernest Little, Newark, N. J.

These officers will be installed at the next annual meeting of the Association which will be held in Dallas, Texas, the time to be announced later.

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* From the Laboratory of Edward Kremers.

# COMPARISON OF SPECTROMETRIC METHOD AND ANTIMONY TRICHLORIDE TEST FOR ESTIMATION OF VITAMIN A POTENCY.*

BY W. S. JONES AND W. G. CHRISTIANSEN.[1]

For determining the Vitamin A potency of cod liver oil the U. S. P. prescribes a biological assay. Any vendor, therefore, who markets this product as U. S. P. oil must be able to show, by the official method, that it complies with the specifications for potency. We know that there may be some differences between human response and the response obtained with different species of animals, and that the selection of the test animal is therefore a matter of great importance, but we realize that products of complex composition, used to produce biological effects, should be fundamentally controlled by a biological assay. Even though Vitamin itself is a definite chemical compound, in cod liver oil it is associated with many other compounds which may be present in varying amounts and which may modify the biological effect.

Thus, for the present, the biological assay must be considered the primary test of potency, and other methods secondary ones, supplying preliminary estimates. We present, in this paper, a comparison of the results obtained by two such methods on oils which had been assayed biologically.

The first of these tests—the Carr and Price antimony chloride test—is well known and widely used. During the years of its use in our several laboratories the minute details of the test, upon which depends the value of the result, have been subjected to careful study and control. Much of that work was done in our Biological Research Laboratories.

The second test is a physical one, and depends upon the intensity of the absorption band at 3280 Å. in the ultraviolet.

These chemical and physical tests are of great value in both manufacturing and research. They are rapid and inexpensive, and may therefore be used at every intermediate step in both laboratory and plant, supplying quickly and cheaply approximate data which make possible quick decisions and rapid progress, with a reasonable expectancy that the biological assay will confirm the correctness of the action taken. It is necessary, of course, always to keep in mind the limits of accuracy of these tests.

Various workers,[2-8] using the spectrometer, or physical method, have shown that there exists a definite and consistent relationship between the intensity of the absorption band at 3280 Å. in the ultraviolet and the biological assay for Vitamin A.

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* Section on Practical Pharmacy and Dispensing, A. PH. A., Portland meeting, 1935.

[1] Research Department of the Chemical and Pharmaceutical Laboratories, E. R. Squibb and Sons, Brooklyn, N. Y.

[2] Morton and Heilbron, *Biochem. J.*, 22, 993 (1928).

[3] Drummond and Morton, *Ibid.*, 23, 785 (1929).

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It was highly desirable, therefore, to compare the newer, physical method with the antimony trichloride color test.

Our preliminary findings show that the spectrometric method gives no better estimation of Vitamin A potency than does the colorimetric antimony trichloride test as used by us.

Eleven oils which had been assayed biologically were tested by the antimony trichloride method and were then sent to laboratories having equipment for the spectrometric assay. Nine oils were sent to Laboratory "A;" four of these plus two additional oils were sent to Laboratory "B." In Table I are listed the results of all three assay methods.

TABLE I.—ASSAY IN TERMS OF U. S. P. 1934 REVISION UNITS OF VITAMIN A PER GM.

| Oil No. | Biological Method. | Antimony Trichloride Method. | % Deviation. | Spectrometric Method. Laboratory A. | % Deviation. | Laboratory B. | % Deviation. |
|---|---|---|---|---|---|---|---|
| 1 | 85,750 | 75,600 | −11.8 | 76,440 | −10.9 | ... | .. |
| 2 | 107,450 | 78,400 | −27.0 | 94,080 | −12.4 | ... | .. |
| 3 | 2,192 | 2,240 | + 2.2 | 2,784 | +27.0 | 3,000 | +36.8 |
| 4 | 2,156 | 2,054 | − 4.7 | 2,523 | +17.0 | ... | .. |
| 5 | 3,080 | 3,156 | + 2.5 | 2,850 | − 7.4 | 3,760 | +21.7 |
| 6 | 2,156 | 2,279 | + 5.7 | 2,497 | +15.8 | ... | .. |
| 7 | 2,478 | 2,409 | − 2.8 | 2,497 | + 0.8 | 2,730 | +10.2 |
| 8 | 3,780 | 3,347 | −11.5 | 45,225* | Very large | 4,100 | + 8.5 |
| 9 | 60,900 | 64,440 | + 7.3 | 60,750 | − 0.2 | ... | .. |
| 10 | 236,000 | 226,000 | − 4.2 | ... | ..... | 249,000 | + 5.5 |
| 11 | 171,000 | 156,800 | − 9.6 | ... | ..... | 110,000 | −35.6 |

* Laboratory A rechecked this figure and found it to be correct.

In Table II the results have been grouped according to the extent to which they differ from the biological assay.

TABLE II.

| Deviation from Biological Assay. | Antimony Trichloride Method. | Spectrometric Method. Laboratory A. | Laboratory B. |
|---|---|---|---|
| ± 5% | 45.4% | 22.2% | .. |
| ± 5–10% | 27.3 | 11.1 | 33.3% |
| ±10–20% | 18.2 | 44.4 | 16.7 |
| ±20–30% | 9.1 | 11.1 | 16.7 |
| ±30–40% | .. | .. | 33.3 |
| > ± 40% | .. | 11.1 | .. |

## DISCUSSION.

With one exception (Sample No. 11) Laboratory "B" has consistently and with wide variation, obtained higher values for Vitamin A potency than is shown by biological assay.

Excluding Sample No. 8 (we believe the value given for this oil by Laboratory "A" is erroneous and should probably be 4522.5) Laboratory "A" has obtained on oils of high potency (Samples Nos. 1, 2, 9) Vitamin A values in reasonable agreement with the results of biological assay. Greater variations occur, however, in the oils of low potency (Samples Nos. 3, 4, 5, 6, 7).

Except in the case of Sample No. 2 the antimony trichloride test, as used by us, has given Vitamin A values which are in fair agreement with those obtained through biological assay.

We gratefully acknowledge the assistance of the Biological Laboratories of E. R. Squibb and Sons in conducting the biological assays reported herein.

## ENTERIC COATINGS. II. EXCRETION STUDIES WITH SODIUM SALICYLATE TABLETS.*

BY MILTON WRUBLE.

In an earlier paper (1) the use of calcium sulphide-methylene blue tablets was found of value in checking the effectiveness of enteric coatings qualitatively. As a further step in this direction it was thought desirable to make a quantitative evaluation. Since salicylates are excreted more or less quantitatively, are widely used in medicine and in many cases produce irritation in the stomach when unprotected by a suitable coating, they were of particular interest in this connection.

Salicylates are excreted quite rapidly but incompletely in the urine, mainly as such, and to a small extent as salicyluric acid (2) and a number of other products. Stockman (3) states: "Salicylic acid and salicylates are conjugated and excreted as salicyluric acid. Persons taking up to 180 grains of sodium salicylate per day eliminate no free salicylic acid." Holmes has found (4) that for doses of sodium salicylate of from 2 to 5 Gm. the salicylic: salicyluric ratio is constant at the value of 40:60.

The absorption of salicylates is quite rapid and for this reason exceedingly small amounts are at times found in the feces, more often none at all. With full therapeutic doses of about 15 Gm., Hanzlik, Scott and Thoburn (5) and Hanzlik and Wetzel (6) were able to recover in the urine about 75 to 80 per cent of the total administered. They concluded that about 20 per cent of the salicylate was destroyed in its passage through the body.

The rate and duration of excretion of salicylates varies with the dosage, the individual and the individual's state of health. In general, it has been found by Blanchier (7) that with doses of 1 to 2 Gm., excretion is completed in 22 hours; Ehrmann (8) found that excretion lasted from 36 to 48 hours in normal individuals; Geissler (9) noted that complete elimination takes place in 12 hours. However, Sée (10) states that it ordinarily lasts from 24 to 48 hours.

The quantitative recovery of salicylates from tissues and body fluids involves difficulties and complexities not present in foods and simple aqueous solutions. This can be readily appreciated since in passing through the body the salicyl group is conjugated with glycocoll forming a salicyluric acid, whose properties differ from salicylic acid. Moreover, the presence of colloidal and other interfering substances prevent a smooth and quantitative recovery of salicyclic acid.

A number of quantitative methods for the determination of salicylates in urine have been developed. None appears entirely satisfactory. A critical survey of these methods has been adequately made by Thoburn and Hanzlik (11). Recently Merz (12) and Blume and Breuning (13) have outlined extraction methods for the determination of salicylates in urine.

* The Research Laboratories, The Upjohn Company, Kalamazoo, Michigan.

Since most of the proposed methods show decided weaknesses, Thoburn and Hanzlik have adapted a steam distillation method to the determination of salicylates in body fluids. Briefly their method (14) consists of:

1. Hydrolyzing an aliquot portion of urine which has been collected until the voided specimen, when extracted with ether and tested with ferric alum, is salicyl-free.
2. Distilling with steam until the salicylates are driven over.
3. Colorimetric estimation of the distillate with ferric alum.

Holmes has criticized (15) this method since he claims that the distillation of the salicylates is incomplete because the salicyluric acid is hydrolyzed only very slowly and that at the high temperatures which have to be used the salicyl ring is destroyed to some extent. He modifies the Thoburn-Hanzlik method in several details but his results indicate a lack of consistency.

Several of these methods were investigated by the author and the one finally adopted as most satisfactory was that of Thoburn and Hanzlik with several modifications. Holmes' method invariably yielded low results. The Merz method offered considerable difficulty because of the formation of troublesome emulsions and, as a result, the extraction process was long and tedious.

The Thoburn-Hanzlik method was modified in several details to yield better results. Considerable difficulty was experienced in completely recovering the salicylates from the average urine and with some urines the last traces were removed only after long and vigorous distillation. No doubt some urines are more highly conjugated than others and this accounts for the resistance displayed in the recovery of the salicylates. By keeping the volume of urine as low as possible during distillation, the recovery is considerably hastened. It was found advantageous, therefore, to begin with half the volume of urine recommended, namely, 50 cc.

Enough phosphoric acid is added to the urine to make it distinctly acid and the large excess recommended by Thoburn and Hanzlik avoided. Phosphoric acid proved to be the best hydrolyzing agent because of its high boiling point and also because it is not readily decomposed. However, with a large excess present it is quite possible that some is mechanically carried over into the distillate.

In this connection Thoburn and Hanzlik (16) make the following statement:

"The distillate should be perfectly clear, practically colorless and possess a nearly neutral or very slightly acid reaction to litmus paper."

However, Nicholls has shown that the solution should be appreciably acid. He states (17):

"Contrary to the usual statements in the literature, this test should not be applied to a neutral solution of a salicylate, as the color so produced is not of satisfactory shade. To obtain a good tint the solution should be slightly but appreciably acid, the intensity of color from a given quantity of salicylic acid decreasing with increasing acidity."

For the colorimetric comparison in Nessler tubes, salicylic acid rather than sodium salicylate as recommended, was used. It was found almost impossible to match the colors when sodium salicylate was employed as a standard. From what has already preceded it is apparent that the standard should be appreciably acid.

A 1 per cent solution of iron and ammonium sulphate which has been previously boiled and filtered was found to be superior to the 2 per cent solution

recommended by Thoburn and Hanzlik. The latter solution is considerably more intense in yellowish green color and with dilute solutions interferes with the colorimetric determination.

## EXPERIMENTAL.

Eight individuals ranging in age from 18 to 25 years were each given three 5-grain tablets of sodium salicylate both uncoated and enteric coated.[1]

A complete 48-hour specimen of the urine was collected in each case. The urine samples were properly preserved and several determinations made on each sample. Distillation was carried out in each case until the ethereal extract of the residue showed no pink coloration with ferric alum.

The following table indicates the results obtained:

TABLE I.

| Patient. | Total Volume Collected in 48 Hours. | Condition of Tablet. | Gm. Salicylate Recovered. |
|---|---|---|---|
| J. W. A. | 1750 cc. | Coated | 0.12 Gm. |
| | 1905 | Uncoated | 0.18 |
| E. J. V. | 1100 | Coated | 0.33 |
| | 1570 | Uncoated | 0.39 |
| E. E. B. | 1635 | Coated | 0.38 |
| | 1550 | Uncoated | 0.24 |
| M. F. | 1875 | Coated | 0.38 |
| | 2675 | Uncoated | 0.35 |
| K. K. | 1450 | Coated | 0.14 |
| | 1325 | Uncoated | 0.23 |
| D. F. | 2370 | Coated | 0.53 |
| | 3380 | Uncoated | 0.36 |
| W. W. | 2225 | Coated | 0.30 |
| | 2210 | Uncoated | 0.30 |
| S. K. | 3620 | Coated | 0.28 |
| | 3280 | Uncoated | 0.25 |

## CONCLUSIONS.

1. Several modifications of the Thoburn-Hanzlik method for the determination of salicylates in urine have been outlined.

2. The results indicate a close agreement between the quantities of salicylate excreted in the coated and uncoated tablets. Since no gastric irritation was reported, this is an indication of the effectiveness of the enteric coating.

3. The average recovery following the ingestion of 15 grains of salicylate appears to be approximately 30 per cent.

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(2) Hanzlik, P. J., "Actions and Uses of the Salicylates and Cinchophen in Medicine," page 35.

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[1] This enteric coating was developed in the Research Laboratories of The Upjohn Company.

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(*To be continued.*)

## COMPOUND SOLUTION OF CRESOL—THE VARIATION OF PHENOL COEFFICIENT WHEN DIFFERENT OILS ARE USED FOR SAPONACEOUS BASE.*,[1]

P. L. BURRIN, A. G. WORTON AND F. E. BIBBINS.[1]

The Bureau of Animal Industry of the United States Department of Agriculture has been very active in its supervision of the interstate shipment of domestic animals, and as a part of their duties they have described means for disinfecting cages as well as animals. Since such a procedure is common and within their control, it is only a natural sequence that they should be highly interested in the control of the material used in these prescribed methods of disinfecting. This department deviated from the standards which were laid down by the United States Pharmacopœia for compound solution of cresol as early as 1915 (1). They deemed it necessary, in view of their extensive recommendations for the use of soap solutions of cresol, to lay down requirements in many cases more stringent than those in the United States Pharmacopœia. The economy of manufacture was given due consideration when making these specifications as well as the effectiveness of the final product.

In the interest of improving compound solution of cresol U. S. P. the authors tried several oils which are available for use in the manufacture of such a product. Compound solutions of cresol were prepared, following the directions of the United States Pharmacopœia, tenth revision, using corn oil, peanut oil, sesame oil, cocoanut oil, and soy bean oil (2). In order to have a control sample, a solution was made

* Scientific Section, A. PH. A., Portland meeting, 1935.

[1] From the Control Laboratories, Eli Lilly and Company.

from linseed oil. Comparison of the resulting finished preparations was then made, particular attention being given to the phenol coefficients.

The usual means of comparing the effectiveness of these cresol solutions has been the determination of their phenol coefficient. There has been considerable discussion about the actual worth of the phenol coefficient in the evaluation of compound solution of cresol. Every one agrees that there can be a variation in this determination due to the age and viability of the organisms used, the media, the test broth, and perhaps in the technique in running the test. Whatever may be the opinion as to the value of a phenol coefficient, it does seem that on a comparative basis it has value. In the following experiments the phenol coefficients were determined on all samples at the same time with the same cultures. Whether the phenol coefficient appears high or low, our only purpose in assigning numerical values is to show the ratio of the phenol coefficients in the experiments performed. As previously mentioned, the phenol coefficients were determined by the standard method. Although we did not attach a great deal of significance to the phenol coefficient as a true lethal index, we considered it of value in showing the comparative activity of the solutions prepared from the various oils. The results of these determinations are shown in the following table. It is interesting to note from the table that the sample made from cocoanut oil shows a phenol coefficient 100 per cent greater than the coefficients shown by samples made with other oils, when tested with *B. typhosus*, and 50 per cent greater when tested with *Staphylococcus aureus*.

It is customary in the manufacture of large quantities of compound solution of cresol to filter the liquid as a final step in order to obtain a brilliant product. Consequently, the ease with which the various solutions filtered was considered an advantage in selecting the oils which might be desirable. For this purpose the solutions were filtered, and the ease with which they ran through the filter paper is noted in the following table.

TABLE OF COMPARISON.

| Oil Used. | Filterability. | Phenol Coefficient Using *B. typhosus*. | Phenol Coefficient Using *Staph. aureus*. | Solidifying Point Degrees Fahrenheit. |
|---|---|---|---|---|
| Corn | Good | 1.5 | 1.0 | −20 |
| Peanut | Very poor (gelatinized) | 1.0 | 1.0 | Gelatinized |
| Sesame | Good | 1.5 | 1.0 | −15 |
| Cocoanut | Good | 3.0 | 1.5 | −15 |
| Soy bean | Good | 1.5 | 1.0 | −20 |
| Linseed | Good | 1.5 | 1.0 | + 5 |

The water content and excess alkali were determined in all samples, and found to be within the usual limits. It was at this point we discovered that compound solution of cresol made from sesame oil had a very poor solubility in alcohol.

In observing the several experiments it was noted that the samples made from peanut oil became very thick, and turned to a jelly when stored at room temperature. When the sample was shaken, it again returned to a liquid condition, but when allowed to stand undisturbed it again gelatinized. Since compound solution of cresol may be subjected to rather low temperatures, and since it is very necessary that a dispensable liquid which does not separate at these low temperatures be obtained, it was decided to determine the chill points of all experiments

as outlined in *Bulletin* No. 1308 of the Agriculture Department (3). The results of these tests are recorded in the following table.

It can be observed readily from the preceding table that there are several oils just as desirable as linseed oil for compound solution of cresol. The authors sought to eliminate any comparison of the oils on a price basis, so no experiments were made to ascertain just how low a grade of oil could be used for making the soap of the various products; consequently, all of the oils used were of high grade. Corn oil and sesame oil make a satisfactory product, which has a chill point somewhat lower than the product made from linseed oil. Cocoanut oil makes a satisfactory product which shows a phenol coefficient from 50 to 100 per cent higher than the coefficients shown by products made from other oils. The price of cocoanut oil is slightly higher than linseed oil, but it apparently makes a product that is decidedly more efficient.

### CONCLUSIONS.

It may be said that there are several oils; namely, corn, soy bean, cocoanut and linseed that will make a satisfactory cresol compound. Peanut and sesame oils are not desirable for use in such a product. It appears from the above experiments that cocoanut oil is the only one of this group that can be used to manufacture a satisfactory product which at the same time shows an increased phenol coefficient. For this reason it may be desirable as a base for compound solution of cresol. Finally, it seems that there may be oils more desirable, for the manufacture of these soap cresol solutions, than linseed oil that is now prescribed by the United States Pharmacopœia.

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## IMPROVEMENT IN TECHNIQUE IN THE PREPARATION OF THREE COMMON PRODUCTS.*

BY EDWARD D. DAVY.

There are distinct advantages in the modification of some of the commonly accepted formulas both as to the ease of preparation and the appearance of the finished product, and this without altering the value of the product in any way.

The three products used to illustrate improvement in technique are: Syrup of White Pine Compound, N. F., Elixir of Phenobarbital, and Soft Soap, U. S. P. IX.

*Syrup of White Pine Compound* when prepared by the N. F. formula without change yields a product which, upon aging, results in an oleaginous suspension which, after a few days, forms an oily layer on the surface of the syrup making an unsightly preparation. This condition may be corrected by siphoning or otherwise removing the clear liquid after aging. The directions for preparing the product do not provide for clarification.

The Oil of Sassafras which represents an excess over saturation is the chief offender, though the resin from the Balm of Gilead Buds also contributes to this

* Section on Practical Pharmacy and Dispensing, A. Ph. A.

oleaginous material. To correct the excessive oil residue in this syrup, if one adds the oil to the menstruum the excess is retained by the drug, and saturation is all that should be expected. The sugar is dissolved in the percolate and the chloroform added as indicated in the formula.

*Elixir Phenobarbital.*—While no formula appears in our standard texts this elixir was selected because of the difficulty encountered in filtering the finished product when cudbear is used as the coloring agent. In addition the maximum color effect is not obtained when the cudbear is macerated in alcohol as is usually prescribed. The alcoholic extract or tincture when added to the preparation results in a product not brilliantly clear and the colloidal material from the previously clear alcoholic solution makes filtration very difficult, being accentuated by the presence of both glycerin and syrup.

This filtration difficulty is avoided by macerating the cudbear in alcohol, glycerin and water in approximately the same ratio as is represented in the finished product. Filtration is fairly rapid and the depth of color is increased and it remains brilliantly clear. The phenobarbital is dissolved in a small amount of alcohol reserved for this purpose and added to the clear filtrate from the cudbear. Sugar in amount to the syrup prescribed is then dissolved by agitation.

To show the solvent action of glycerin on the coloring from cudbear, one need only to evaporate a portion of the alcohol-glycerin filtrate. The glycerin residue remains perfectly clear and may be diluted with water without loss of its brilliancy.

*Sapo Mollis U. S. P. IX.*—(Cold process.) Since there is a considerable demand for a potash soap as contrasted with the U. S. P. X sodium-potassium mixture, suitable for liquefaction for use in general soap service and in the surgery of hospitals, it was thought advisable to offer a convenient procedure for its preparation, one which has worked successfully in our laboratory for several years.

The following procedure makes a good soft soap, or if one chooses he may, by adding distilled water, prepare a liquid soap containing up to 22% anhydrous soap. The U. S. P. IX formula with regard to oil, potassium hydroxide and the initial water to be used needs no change.

The alkali is dissolved in distilled water (10% of the weight of finished soap or 100 cc. for 1000 Gm. of soft soap) and immediately add all the oil and stir well. For small amounts of soap the saponification will be completed in from three to four hours. Stirring the mixture at intervals to emulsify the unsaponified oil is all that is necessary for saponification. Occasionally when working with small amounts of soap and always when working with quantities of 500 to 800 pounds or more it is necessary to increase the water content by about 20% as saponification approaches completion. Completeness of saponification may be told by dissolving a small amount of the soap concentrate in distilled water; if saponification is complete a clear solution results.

One should check the alkalinity or acidity by dissolving a weighed sample of the soap concentrate in alcohol and proceed as usual to adjust the product to any degree of alkalinity, or neutrality if that is desired. All additions of either alkali or oil must be made while in the concentrated form.

If one desires he may make a solution of the alkali and assay it previous to mixing with the oil.—I have found that potassium hydroxide, U. S. P. grade, when properly protected from moisture, may be added in the quantity prescribed and a

soap with only a slight alkalinity results. Benzoic Acid may be added to a liquid soap to reduce alkalinity when it is desired to make a neutral or acid-liquid soap.

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## POTENT MEDICAMENTS IN SUGAR-COATED PILLS AND IN CONFECTIONS.*

BY JOHN F. SUCHY.[1]

The subject of pill-coating and candied medicaments has received much consideration in recent years. The coated commercial pill or tablet has become a masterpiece of attractiveness and palatability. Disagreeable substances have been skilfully blended into confection form until their gustatory incompatibilities have completely faded away. Repellance has given place to attractiveness and one can now look forward to the swallowing of his tonic or cathartic dose, of strychnine, of Nux Vomica or of Atropine with pleasant anticipation. Nature's warnings of physiological potency—extreme bitterness or nausea—have become masked. Disagreeables have become agreeables—a creditable achievement of modern pharmacy.

As is true with so many good things, undesirable factors so frequently manifest themselves, calling for modification or restriction. The barbiturates once hailed as hypnotics par excellence have been found to have a destructive action on the white blood cells. Emetine though found distinctly amœbicidal, cannot be practically used in tooth-pastes in sufficient quantities to effect pyorrheal cures. So it has also proved true of our sugar coatings and confections. Frequent newspaper head-lines call attention to poisonings of children due to accidental ingestion of pills or other medicaments containing highly potent substances. More intimate experiences of members of this group will undoubtedly recall instances when these individuals themselves, their children or child-friends have eaten such pills or licked off their alluring coatings. The interest of the author in this study began only last fall and even since then articles regarding two pertinent incidents have appeared in the local press of Western Montana, an area occupied by less than 250,000 inhabitants. The first—a case in Orchard Homes, a community adjacent to the city of Missoula, wherein a $2^1/_2$ year-old girl swallowed eighteen aspirin gum tablets with the result that her subsequent condition was for some time considered as critical. The second incident occurred only about two months ago in Great Falls where two youngsters showed symptoms of poisoning, presumably due to the eating of pills containing belladonna—one of these cases resulted in a fatality.

About two years ago a rather pitiful case was reported from Butte where an uncle from one of the eastern states had just arrived for a visit with his Montana relatives and accidentally or perhaps thoughtlessly left a package of Hinkle's Pills on the dresser of his room. Somewhat later during his absence his little niece spied the alluring pellets, tasted them, found them good and ate several with the sad sequel that shortly afterwards she died in convulsions.

In a fine address (1) delivered in 1930 and later published in the *Journal of the American Medical Association*, President Aikman of the Pediatrics Society of

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* Section on Practical Pharmacy and Dispensing, A. PH. A., Portland meeting, 1935.

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Rochester presents statistical data taken from New York Health Reports which show that in that state alone during a period of four years, there occurred 177 deaths traceable to accidental poisonings. Eighty children of five years of age or under were included among the victims. Forty of these deaths were due to the eating of pills or tablets containing strychnine. This list does not include cases which resulted in recovery nor does it include many of those which proved fatal before the arrival of a physician or where his period of supervision was of too short duration to warrant proper conclusions. A report compiled by the Metropolitan Life Insurance Company (2) lists 273 deaths of children under five years of age insured in the Industrial Department of this company as due to accidental poisoning. Definite information of the type of poison consumed was reported in 242 of the cases. Strychnine was held responsible for 82 of these deaths or approximately one-third of those in which the nature of the poisonous substance was known. Forty-six of these deaths were found to have been due to the eating of strychnine pills or tablets. Quoting from the bulletin itself—

> "Children, and especially young children, are the most frequent victims of accidental poisoning. Strychnine takes a heavier toll of child life than does any other poison.—More than half of the young children who die from strychnine poisoning are victims of pills or tablets containing this substance."

It has been reported that more deaths occur in the State of New York among children of less than five years of age because of accidental consumption of strychnine pills than are caused by both rabies and tetanus.

While it is true that the relative percentage of fatalities is likely to be lower in Western Montana owing to less congestion of population and a consequent lesser chance of youngsters picking up poisoned medicaments in rubbish heaps, abandoned houses, etc., yet even in this area the hazards involved merit consideration. Surely there is need of a greater care in the dispensing and handling of dangerously potent pills and confections. The American Medical Association and other scientific groups have seriously considered the subject. It has been suggested that pills and tablets containing poisons be left uncoated which argument does not seem unreasonable. Perhaps it would be even well to coat these deadly buckshot with aloes or quinine or some other similar bitter substance. It has also been suggested that caution labels with appropriate antidotal directions be applied to containers in which these substances are dispensed. This remedy likewise seems worth while for cautionary specifications on the label would tend to localize the sale of these remedies to the *bona fide* drug store, thus stressing the professional status of pharmacy with the laity. The true nature of even such old remedies as Hinkle's Pills makes the drug store the proper and logical place for their sale. To purchase strychnine one must invariably sign the poison register but to buy it in candied form one needs only to write to some mail order house or in many states to go to the grocery or department store. Besides, what youngster would want to eat the unblended alkaloid anyway?

It has been suggested that the omission of strychnine from laxative pills would markedly lessen the number of accidental poisonings. Several authorities, including Dr. Fantus (3), express a certain skepticism as to the therapeutic utility of the alkaloid in such preparations. In their splendid article published in one of last

December's issues of the *Journal of the American Medical Society*, Drs. Yonkman and Singh (4) report results of five experiments performed on four persons, all of which seem to indicate that strychnine has little if any peristaltic effect even if administered in amounts two or three times as large as is contained in the usual cathartic pill. Both of these workers strongly advocate the discontinuation of the alkaloid for purposes of promotion or augmentation of catharsis.

We are ever ready with our protests when the dog poisoner plies his business of canine destruction, and throws out his toxic bait. "This is criminal," we say, because of the hazard to children—yet who worries when the careless tenant, too frequently uninformed of the possible dangers, moves out of a dwelling and leaves behind him veritable traps of candied poisons. The problem of candied or sugar-coated medicaments does merit consideration of this organization.

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## NATIONAL UNITY OF STATE COÖPERATION BETWEEN PHARMACIST, PHYSICIAN AND DENTIST.*

BY GEORGE C. SCHICKS.[1]

Much has been written to date concerning the closer coöperation between the allied medical professions. The thinking pharmacist has come to realize that if prescriptions employing official drugs and preparations are to be written for, that authentic information regarding United States Pharmacopœia and National Formulary preparations must be effectively and repeatedly presented to those groups of men who are licensed by law to prescribe medication. It is encouraging to note that progressive individual pharmacists have devised effective means of meeting the situation of closer coöperation with the medical men whom they serve. It is equally stimulating to watch the progress of various county pharmaceutical associations and the contacts they have made with county medical and dental groups. New Jersey county pharmaceutical groups have been especially active in their efforts to encourage inter-professional relationship, and because New Jersey has gone a step further and organized a state-wide movement to foster closer contacts between pharmacist, physician and dentist, I am asking your permission to outline briefly the work that this state is undertaking in its effort to increase the professional usefulness of its practicing pharmacists.

"In the New Jersey Pharmaceutical Association, there is a Professional Relations' Committee with duties obvious from the name of the committee. This committee, through the coöperation of the state medical and pharmaceutical associations, has created the Joint Committee on Professional Relations of the

* Section on Legislation and Education, A. PH. A., Portland meeting, 1935.

[1] Assistant Dean, Rutgers University, College of Pharmacy.

New Jersey Medical Society and the New Jersey Pharmaceutical Association. The physicians on the Joint Committee are the members of the Medical Practice Committee for the State Medical Society. The pharmacists on the Joint Committee are appointed by the State Pharmaceutical Association. These groups working through their respective associations have authorized the publication of a New Jersey Formulary. This publication does not conflict with the official publications—the United States Pharmacopœia or National Formulary, for none of the preparations in the New Jersey Formulary are official. If and when they are accepted by either of the official publications, the preparations will be dropped from the New Jersey Formulary. To date there are eleven formulas which have been accepted for the New Jersey Formulary. The formulas represent popular combinations of drugs which are popularly sold and which can be made by the pharmacist.

"Each month the *Journal* of the New Jersey Medical Society contains an article concerning these preparations or others official in the United States Pharmacopœia or National Formulary. The same article is printed in the *New Jersey Journal of Pharmacy*. In this way both professions are made aware of what is being recommended and prescribed employing official drugs and preparations. When enough formulas have appeared in the *Medical Journal* to warrant their compilation into a printed New Jersey Formulary, the Medical Association will supply its own members with the "New Jersey Formulary." In the interim the State Pharmaceutical Association has had printed in loose-leaf form, the formulas published to date, which leaves are available at small cost to pharmacists for distribution among the physicians they serve.

"Inasmuch as physicians treating Federal Emergency Relief Administration patients are required to prescribe official drugs and preparations, the F. E. R. A. has approved the use of the 'New Jersey Formulary' preparations. This approval has given the 'New Jersey Formulary' most favorable publicity among physicians of the state.

"This summer at the meeting of the State Medical Society the Pharmaceutical Association was asked to make a display of 'New Jersey Formulary' preparations in the Scientific Section, so that the medical men could see the preparations and have them discussed if they so desired. At the same meeting a very comprehensive report of the work of the Joint Committee was made by one of the medical men on the committee to his fellow association members. The pharmacy members of the Joint Committee were the guests of the Medical Association at the above-mentioned meeting. Next year the Medical Practice Committee or the medical men on the Joint Committee will be guests of the New Jersey Pharmaceutical Association.

"At a luncheon meeting of the Joint Committee, a motion was presented by one of the medical men, and passed, which provided that during the coming year qualified speakers be invited by the Medical Association to appear at the various county medical organization meetings, to instruct physicians on the 'New Jersey Formulary,' United States Pharmacopœia and National Formulary drugs and preparations. At such meetings pharmacy speakers will be given the opportunity not only of discussing prescription writing and the use of official drugs and preparations, but they will be afforded an excellent opportunity to discuss the economic aspect of such prescribing.

"Here, for example, are a few comparative costs to be considered when employing 'New Jersey Formulary' formulas as compared with the proprietary articles:

| N. J. F. Preparations. | Amount. | Proprietary Cost. | N. J. F. Cost. |
|---|---|---|---|
| Elixir Phenobarbital | 1000 cc. | $ 5.00 | $ 0.75 |
| Syrup Potass. Guaiacol Sulphonate | 1000 cc. | 4.25 | 0.95 |
| Pulvis Bismuth Subcarb. Comp. | 100 Gm. | 0.55 | 0.17 |
| Nebula Ephedrine | 1000 cc. | 26.40 | 2.06 |
| Nebula Ephedrine Comp. | 1000 cc. | 26.40 | 2.14 |
| Elixir Amidopyrine | 1000 cc. | 6.00 | 1.43 |
| Pulvis Alkalinus Effervescens | 100 Gm. | 0.50 | 0.17 |
| Pulvis Bismuth Subnitrat. Comp. | 100 Gm. | 0.47 | 0.39 |
| Pulv. Bismuth Subnitrat. Comp. cum Carb. Lig. | 100 Gm. | 0.47 | 0.40 |
| Liq. Ephedrin Sulph. | 1000 cc. | 28.00 | 2.26 |
| Liq. Ephedrin et Epineph. | 1000 cc. | 28.00 | 3.79 |
| | | $126.04 | $14.51 |

"It costs the pharmacist $14.51 to manufacture all eleven formulas in the quantities stated in the 'New Jersey Formulary.' To buy them under proprietary name costs $126.04. A saving of $111.53. I shall leave it to you as to whether or not this sum is worth saving.

"Allied professional coöperation has not confined itself to state medical and pharmaceutical units, for recently has come a request to Rutgers University College of Pharmacy from the chief of the staff of one of the largest hospitals in New Jersey that a course in prescription writing and the use of official drugs and preparations be given physicians and internes of that hospital. When such a course is satisfactorily arranged the chief of staff physician will make it mandatory that the physicians on his staff take the course. From one such hospital fifty to seventy-five medical men would be required to take such instruction. With the request for such a course comes the information that it would not be necessary to make such instruction obligatory, for the physicians of that hospital are eager to get the information.

"With this rather hurried résumé of professional coöperative trends in New Jersey, permit me to suggest again as I did in our meeting last year, that this cooperative trend is of far too great moment to be consigned to individual pharmacists, local and county pharmaceutical groups or state pharmaceutical associations. Should not a movement upon which rests the very security of professional pharmacy, be vital enough to every pharmacist who is interested primarily in the professional aspect of his service, that it be made a movement of national scope? Should not such a movement warrant a national program to unite the pharmacists throughout the country, in a supreme effort to build the same professionalism which is the present heritage of both the medical and dental professions?

"I am aware that many local and county pharmaceutical associations scattered throughout this country are doing effective work among physicians and dentists. Other groups have failed because they lacked a definite method of attack and a sane program to be followed to a satisfactory conclusion.

"Pharmacy to-day should have a body created within the AMERICAN PHARMACEUTICAL ASSOCIATION, manned by capable and experienced men, with re-

search laboratories which will provide men in the profession with information regarding new drugs, chemicals and preparations appearing in constant flow on the market. Pharmacy should have a body created within the AMERICAN PHARMACEUTICAL ASSOCIATION which could compile information regarding the activities of local and state pharmaceutical organizations and from the successful activities of such groups develop a national program to foster closer coöperation between the allied medical professions.

"In justification of my argument for the creation of a national bureau for pharmaceutical information, I am making mention of a similar service in both the medical and dental professions. Scientific information as well as association proceedings are disseminated from the national headquarters and laboratories maintained by the American Medical Association and the American Dental Association. All new phases of the practice of each group, new medicaments, economic problems, activities of county and state organizations, when their work merits being the pattern for other county and state groups—all of this information goes out to the physician from the headquarters and the Council on Pharmacy and Chemistry of the American Medical Association; all of this information goes out to the dentist from the headquarters and the Council on Dental Therapeutics of the American Dental Association. Why then should not a similar informative organization be provided by the AMERICAN PHARMACEUTICAL ASSOCIATION? The AMERICAN PHARMACEUTICAL ASSOCIATION has a record behind it of accomplishments of which it can well be proud. It has always stood for the highest ideals in pharmacy and its contributions to the pharmacists of this country have been exceedingly noteworthy. I could conceive of no more appropriate information bureau and investigation laboratory for the AMERICAN PHARMACEUTICAL ASSOCIATION than the new Pharmacy Headquarters Building in Washington, D. C. From there all of the worth-while pharmaceutical information could find its way to the members of the AMERICAN PHARMACEUTICAL ASSOCIATION. There the constructive professional coöperation activities of individuals and organizations could be reviewed and from there could be broadcast a program which is a live, workable project, with thoroughly outlined ideas, scientific displays, scientific information for pharmaceutical speakers and a speaker's bureau for definite pharmaceutical districts or zones. The work among physicians, dentists, veterinarians, chiropodists and medical opticians could then follow a well-planned, definite and effective program.

"So that this important phase of pharmaceutical service can be placed before the AMERICAN PHARMACEUTICAL ASSOCIATION for their consideration the following recommendation is made:

"I recommend that the Section on Education and Legislation[1] go on record as requesting the AMERICAN PHARMACEUTICAL ASSOCIATION to create a body or bodies with the necessary working facilities to give the pharmacists in this country up-to-date information on such pharmaceutical and medical material as new drugs, preparations, formulas, standards, plans for detailing doctors and dentists, also other medical groups, and other information which will prove helpful and be instrumental in increasing the coöperation and service of the pharmacist to the allied medical professions. This information is to appear periodically throughout each

[1] See page 711, JOUR. A. PH. A., for August 1935.

year and some method be devised so that all pharmacists may be privileged to take advantage of such a pharmaceutical service."

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## DENTISTRY AND PHARMACY.*

BY P. T. MEANEY, D.M.D.

"On behalf of the dentists of the Northwest, and particularly the dentists of Oregon, I wish to thank the AMERICAN PHARMACEUTICAL ASSOCIATION for this opportunity of appearing before the assembled delegates."

In the history of civilization a century is but a brief span. In the history of pharmacy and medicine five score years seem longer, but they are still a very small portion of the life of a profession. In the history of American dentistry that period includes by far the more important part of its development. Much of the early history of pharmacy, medicine and dentistry is more or less involved in obscurity, and this is particularly true of pharmacy and medicine. They are not to be discredited on this account because history is, for the most part, a succession of fables which the people agree to follow. They take what is given to them by historians, who, in turn, use what they can of the records which are available. History must always be read with an open mind. Science, as we know it, is essentially modern, although its foundation was laid in remote antiquity. We find that in early periods all knowledge was more or less confused, and there was no differentiation between professions which are widely separated to-day.

It has been said that the tripod upon which every profession rests, if it becomes finally established, must be: The school for the instruction of the future graduates; the scientific society for fraternal intercourse and the presentation of knowledge, old and new; and the journal, to disseminate knowledge and to stimulate a wider education and a more general improvement by reaching a larger public. In short, literature, education and organization are the foundations of any lasting profession. One cannot say which is the most important, but one can safely assert that organization is a great consolidating influence.

A man cannot become educated in a profession until there is a recorded history of that profession. There must be available a carefully digested store of ideas, experiences and conclusions of the past, for it is upon the past that the present is founded. Education is what raises a craft to the dignity of a profession. A craftsman needs only to be trained. A professional man must be not only trained, but he must also be educated. This education can best be acquired from the literature of the profession.

Historically, the profession of pharmacy antedates the other health service professions.

With a history dating back four thousand years, broken only by periods of desperation for improvement, the professions of pharmacy and medicine, which were closely allied during most of their early history, have struggled through the ages to become at present two of our outstanding professions. In the early Assyrian,

* An address given at the Eighty-Third Annual Meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, Portland, Oregon.

Egyptian and Chinese civilizations, we find some very interesting incidents relating to the professions of pharmacy and medicine. There is less known of the pharmacy of ancient China than there is of any other civilization, due, probably, to the fact that the Chinese have always been reticent and secretive to an unusual degree, and because there has been less research in the ancient literature of this living nation than in the literature of many other nations that have disappeared. There is a pharmacopœia-like compilation in Chinese called the Great Herbal. It consists of forty volumes and contains quotations from the works of nearly one thousand authors, many of whom date from a period long prior to the Christian era. The science of medicine, which includes pharmacy, is referred to as a benevolent art. Proof that there were no dentists in China during these periods, and if there were they were regarded with great favor, is indicated by a reference to the following early history.

There were many medical divinities in the religions of China. Of the seventy-two Buddhas, twenty-nine are gods of healing or of drugs. In Taoism, which is a philosophy of abstract virtue, a great part is played by the Yin Yang symbol, or Great Monad, which is a protective charm against evil. Taoism abounds with charms, lucky days and perfect numbers. Rewards and punishments are abundant. Of one hundred fifty separate and particular hells, one is reserved for pharmacists and one for physicians, but there is no mention of dentists. The thirteenth hell is where the victims are perpetually forced to swallow hot, diagreeable medical decoctions.

The profession of pharmacy has been responsible for the development and perfection of many of the basic sciences, chemistry being one of the most outstanding. This profession acts as an intermediary between the other health service professions and the public; therefore, indirectly, you become responsible to a large degree for the health of the great mass of humanity; a responsibility which no other health service profession can boast. Your profession has contributed to all other health service professions without having lost its identity.

From the time of Hippocrates, four hundred years before the Christian era, until the 15th century, all information on dental disease was a small part of medical literature. In 1728 Pierre Fauchard, in his book entitled "Surgeon Dentists," assembled the best of all that was known in dentistry up to that time. Shortly after the 18th century there began to appear in France small volumes written by surgeon-dentists and designed for the laity. Other writers in Europe continued to write upon dental topics and in the American colonies, in the 17th and 18th centuries, the only books on dentistry were the medical books. The main influence on dentistry came from Great Britain during this period. The five important British authors were Berdmore, Hunter, Blake, Fox and Murphy. The reading of these books from Europe stimulated writings in America. In the 19th century several American books appeared by American authors, Doctors Skinner, Flagg and others. The culmination of dental learning at that time was a book by Samuel S. Fitches, published in New York in 1829, written in six different languages. It was a digest of everything ever written on Surgeon Dentistry. It gave a soul to this branch of surgery, which had previously been lacking, and gave to the American dentists a concreteness which they had never had before. Other books written about this time established the preëminence of American dental literature.

Most writers on American dentistry start their history in the first decade of the 19th century. It is true that until 1840, in the United States, medicine and dentistry were essentially one.

The period beginning in 1830, and ending with the panic of 1837, was a period of speculation, mutation and popular unrest. There were acute disturbances within the medical profession itself, which, together with the general unrest, were to have a pertinent relation to autonomous dentistry.

Elisha Perkins' patented treatment of ills by galvanic current, generated by "metallic tractors," had been the vogue in the early years of this century. After the novelty wore off, another cult arose which taught that all medicines not of plain origin were poisonous. The members of this cult adopted the name of "Botanico," or Thomsonians, and received patents on their medicines. Requiring no training, experience or education, but only a sum of money for a book of instruction and a supply of medicine, the cult became popular, grew and prospered. To the annoyance caused by these and other cults was added the problem of medical sects.

Homeopathy, founded by Samuel Christian Hahnemann, was based upon the theory of drug potentiality and was a protest against nauseous doses in vogue with the regular school of medicine. Although there were no institutions in which homeopathy was taught, it made rapid progress because the public was in a restless mood toward medicine, owing to its recent attacks on the cults.

The Botanic-Electis, another powerful sect, was a protest against polypharmacy. They taught the doctrines of specific—the use of a single drug for each disease.

Without precedent, the new dental school founded in Baltimore in 1840 was necessarily modeled after existent medical schools. There was no requirement of preliminary education, and in order to attract medical school graduates, the full course was fixed at a single term of sixteen weeks. There were no clinical facilities, and the faculty, consisting of two physicians and two dentists, merely gave a series of didactic expository lectures, after which the student received the degree of doctor of dental surgery.

Five years later, in 1845, the Ohio College of Dental Surgery was established in Cincinnati. Patterned after the Baltimore School, but with some new features, it became the Western influence in dental education.

The one-session course was soon abandoned for two sixteen-week terms. This made the dental course the same length as the course in most medical schools. Unlike medical training, there was no requirement that the student continue work under a preceptor. The paucity of competent dental surgeons to serve as preceptors forced the dental schools to put clinical instruction into the school curriculum. At this time clinical instruction was not yet part of the medical training. There was little work done under preceptors until 1867, when the Harvard Dental School inaugurated a requirement of sixteen months under a preceptor, in addition to the school course, before the degree was conferred. The current dental journals hailed this as a great advance in dental education.

Another unfortunate occurrence was the application of the term "mechanical dentistry" to that part of dentistry connected with making dentures, as distinguished from the phase of operating on the living teeth of the mouth. Thus, the opponents of dentistry called mechanical dentists "mechanics" and classed them with

the various types of craftsmen, especially after they began to patent their inventions.

The medical profession considered patented instruments and appliances of the same ilk as patent medicines, and so this became still another factor in estranging the professions.

In an attempt to obviate the difficulty which prevented any of the societies from becoming national in character, Elisha Townsend organized the first American Dental Convention in 1855. These national conventions, like their medical counterparts, proved unsatisfactory because of lack of continuity. There being no continuing of officers, the conventions were a series of annual assemblies rather than meetings of an organization, at intervals of a year. There was no uniformity of policy or method, and no such affiliation as one would expect in an organization of persons of the same profession, with ostensibly the same aims, ideals and purposes.

The organization of the National Dental Association in 1897, and its reorganization in 1913 to become the American Dental Association, has continuously expanded its activities, until they now include a large number which extend into every field of the art and science of dentistry, and may be grouped into a dozen or more categories.

The practice of dentistry has not attained perfection. There is no dead level of perfection, and it is well that this is so, for the constant urge of progress is always an abiding stimulus to advancement. Important discoveries and improvements show that the evolution of dentistry has not been halted. As a health service, dentistry has never been more useful or widely appreciated. As a profession, it has never more earnestly and successfully striven to increase steadily in effectiveness.

Dentistry is a natural division of health service; it is a natural division of medicine.

For more than one hundred years dentistry, as a profession, has steadily improved. In the immediate past, the use of medical sciences in dentistry has made dental practice more scientific and effective. The use of medical sciences in dentistry, where they might be just as appropriately and effectively labeled "dental sciences," makes dental practice more scientific, and therefore more efficient. Medicine, in its most comprehensive meaning, includes the sciences and arts of health service in all aspects and in all relationships. In this generic sense, medicine includes not only conventional medical practice, but also dentistry, public education for the protection of health and for the prevention of disease, nursing, pharmacy and public health administration. All of these services are related to the human body and the maintenance, restoration or support of its function.

Recent graduates of a number of dental schools are receiving much more practical pharmacy in the dental curriculum. Dean Mickelsen, of the Pharmacy Department of North Pacific College, was one of the first to inject practical pharmacy training into the dental curriculum of that institution, and, in fact, he was the first to establish this training on the West Coast. Assistant Dean Schicks, of the Department of Pharmacy of Rutgers University, Newark, New Jersey, was responsible for similar training on the East Coast; and there are several other dental schools in the United States that are now providing this training.

I am sure that you are mindful of the contribution which dentistry has supplied both medicine and pharmacy.

In 1844, Dr. Horace Wells, a dentist of Hartford, Connecticut, discovered the use of nitrous oxide, or "laughing gas," as it was first popularly called. The use of ether was discovered by Dr. T. G. Morton, a dentist of Boston, Massachusetts, in 1846. The first operations performed under these anæsthetics were for the extraction of teeth.

The dental profession has been instrumental in doing a great deal of research regarding diets in relation to dental caries, the research of which has brought a demand for large amounts of phosphorus-calcium combinations, also cod liver oil.

The American Dental Association has a council similar to that of the American Medical Association, which was organized to determine the worth of various drugs and preparations used in dentistry. It is organized so that men in the dental profession can take guess work out of their medicaments and dentifrices. A council determines the therapeutic and scientific usefulness of products manufactured for dental use. In this way, the American Dental Association is attempting to rid its ranks of unscrupulous manufacturers who have no regard for either science or truth. It is refusing to rent floor space at dental conventions to manufacturers of questionable products; its leading dental journals are refusing to sell advertising space in the journals to manufacturers whose products are fraudulent or worthless. In line with its campaign to inform its members of worthless products through the reports of its council, it has laid down rigid rules covering the admission of proprietary articles to the list of accepted non-official dental remedies.

Of course, a manufacturer may have a product which is useful and represents it truthfully, and may not have applied to the council for approval. Under such conditions, ask for information regarding the product from the Council on Dental Therapeutics. It would have much more professional significance if a pharmacist inquired of the council regarding the merits of a product offered for sale by the manufacturer, than to have a dentist write to the council asking for information about a product a pharmacist tried to sell him.

The council on Dental Therapeutics asks only that a product have some scientific or therapeutic reason for existence. The American Dental Association published a list of Accepted or Non-Accepted drugs and preparations. The reports of the council of Dental Therapeutics should be a source of information for the pharmacist. It is only through coöperation of the health service professions that a complete service may be rendered to the public.

A national organization of the proportions of the AMERICAN PHARMACEUTICAL ASSOCIATION has unlimited power in educational progress, in unification of licensing procedure, in improvement of the literature and encouragement of research, in classification of laws, and in all those tendencies and forces that converge to develop a unified profession that can best serve public welfare.

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### LIQUOR AROMATICUS ALKALINUS, N. F. VI.

ALKALINE AROMATIC SOLUTION.

| | |
|---|---|
| Potassium Bicarbonate | 20.0 Gm. |
| Sodium Borate | 20.0 Gm. |
| Thymol | 0.5 Gm. |
| Eucalyptol | 1.0 cc. |
| Methyl Salicylate | 0.5 cc. |
| Tincture of Cudbear | 20.0 cc. |
| Alcohol | 50.0 cc. |
| Water, a sufficient quantity, | |
| To make | 1000.00 cc. |

A standard mouth wash formula of an alkaline character.

# FORESIGHT IN PROFESSIONAL PHARMACY.*

BY ERNST T. STUHR.[1]

## INTRODUCTION.

It is unfortunate that pharmacy as a profession has been overshadowed by too much emphasis on the commercial aspects. This encroachment has submerged the dignity of pharmacy and has brought ridicule from allied professions. The problems of a profession concern every member of the profession. It is imperative that all pharmaceutical organizations take heed of this condition and take steps to remedy the situation.

The reputation and prestige of pharmacy among the respected professions is at stake and it depends materially on the training the future pharmacist receives whether pharmacy can cope with present-day demands. This training entails a broad foundation of general knowledge as well as intensified specialization coupled with an abundance of practical apprenticeship in an ethical pharmacy. This apprenticeship should be the culmination of a constructive, coöperative, not competitive, program, between institutions and practicing pharmacists.

Professional experience obtained in the prescription department of an ethical pharmacy has no substitute. Schools and colleges which do not, or cannot, establish a coördinating relationship with health service dispensaries are handicapped in perfecting this vital experience which is an essential prerequisite for the educated pharmacist.

## PROFESSIONAL RELATIONSHIP OF THE PHARMACIST TO THE MEDICAL SCIENCES.

Efficient medical service is the key-note pursued actively by the medical profession. Professional pharmacy constitutes an integral part in the efficient functioning of medicine and, as such, has a very definite and responsible duty to perform in the Nation's health program. In order to fulfil these obligations effectively, a pharmacist should endeavor to excel in both the theory and practice of his profession.

*Functions of the Pharmacist.*—As the custodian of medicines, the functions of the pharmacist are many-fold:

1. The dispensing pharmacist has the responsibility of preparing, compounding and dispensing with efficiency and dispatch.
2. He must assure purity and quality of the products used. This involves a comprehensive knowledge of the medicinal substances prescribed.
3. He must be thoroughly familiar with all modern remedies and their therapeutical virtues which require a knowledge of synthetic chemicals, biological products and a fundamental acquaintance with scientific research.
4. He must be acquainted with proper methods of standardizing as well as with specific means of storage to retain stability. This is necessary because many of the products are complex and delicate compounds which require special care.
5. He is the final distributer of medicinal products for the sick. This requires strict professional integrity, and is a duty which cannot be undertaken lightly.

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* Section on Practical Pharmacy and Dispensing, A. PH. A., Portland, Oregon, meeting, 1935.

[1] School of Pharmacy, Oregon State College, Corvallis.

An adequate knowledge of, and ability in, the above, will help a practicing pharmacist to be of invaluable service to the physician and to the community in which he is practicing. The care with which he attends to these details will do a great deal toward elevating the respect of pharmacy as a profession.

*The Hospital Pharmacist.*—The duties of the hospital pharmacist are two-fold:

1. Functioning as a competent pharmacist.
2. Acting as a scientific "information bureau" to the hospital medical staff and nurses.

It is a vital necessity for every large hospital (in order to insure proper control of medical supplies) to maintain an adequate dispensary supervised by a competent pharmacist. Because of his fundamental training and practical experience, the hospital pharmacist should possess a background of knowledge which will enable him, or her, to contact the medical staff with professional confidence. This qualification can be attained by keeping abreast of the latest scientific developments in the fields of medicine and pharmacy. This is a paramount issue for the dispensing pharmacist. Reading is a potent factor.

## PHARMACEUTICAL EDUCATION.

The proper prescription for training future pharmacists includes a study and recognition of the increasing needs and demands of the public as well as keeping abreast of current pharmaceutical and medical advances. Intensified efforts to constructively develop the mental abilities and capacities of selected students in the direction of professional ideals is a paramount duty of our institutions, thus informing and developing the profession of pharmacy as to growing responsibilities. The social and educational problems must go forward hand in hand.

Proper training of the pharmacist in compounding and dispensing involves not only adequate instruction in fundamentals which are available in recognized institutions, but also practical experience (apprenticeship) in ethical prescription stores, hospitals or public dispensaries.

These latter facilities, however, are not always available should the college or school be remotely located from populated regions of the country. In those institutions which do not have access to the proper channels for practical experience, special courses may be developed to supplement the natural environments to obtain this fundamental professional experience.

A number of schools maintain "model drug stores" for instructional purposes, primarily for the development of the commercial phases of the drug business. These stores have become invaluable adjuncts for the inexperienced student. In addition to giving the student commercial training, these "model drug stores" could also be used for training in the professional side of pharmacy. The prescription department of these stores could be used as a true basis for professional training in prescription compounding. It need not be operative from a dispensing viewpoint in order to be useful, hence would not be competitive. This department should be stocked with medicinal products currently prescribed by the practicing physicians. The students could make a survey of local operating drug stores and make a study of current prescriptions with the objective in view of keeping a proper stock in the prescription department of the "model drug store." This phase of the store could then be correlated with the respective courses in operative pharmacy where the

student has an opportunity to prepare and study the various classes and types of preparations commonly prescribed by the medical profession.

The use of the "model drug store" for practice in both commercial and professional pharmacy would be valuable preparation for a student's apprenticeship in an actual situation and would be a means of showing the student the true relationship between commercial and professional pharmacy. The method suggested would also give the student an opportunity to get first-hand information on drugs which are in constant use and which are used only rarely; this would be valuable from a practical standpoint.

It is imperative that the schools give a standard of instruction that will prepare the future pharmacist to be resourceful and competent to meet the demands of the medical profession and the advances of research. Without this objective professional pharmacy cannot long endure. This means a better understanding and recognition of the present-day needs.

The elevation of the standards of pharmaceutical education in the United States during the past twenty years has been phenomenal. Practically the entire effort has been concentrated on undergraduate pharmaceutical training, the quality of which now compares favorably with that of any country.

In the majority of communities the ratio of pharmacists to the population is too high. The rate of increase in the profession continues greater than the rate of increase in the population. The great need of the country is for better, not more, pharmacists, and for opportunities by which those in practice and those who are qualified can prepare themselves adequately for their responsibilities to the public.

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## AMERICAN PHARMACEUTICAL ASSOCIATION AT THE TEXAS CENTENNIAL EXPOSITION, DALLAS.

A recent issue of the Dallas Chamber of Commerce states that six national conventions will send more than 1000 members of the pharmaceutical profession to Dallas during the TEXAS CENTENNIAL EXPOSITION, which opens June 6th.

Of especial interest to the profession will be the medical and health display in the United States Building. This exhibit will be placed by the Federal Government at a cost of some $40,000.00. Elaborate displays of private corporations showing the latest in pharmaceutical equipment, supplies and methods, will be found in the Hall of Varied Industries on the CENTENNIAL grounds. In addition there will be interesting exhibits of other kinds throughout the grounds.

Meeting simultaneously during the month of August, the half dozen parleys will draw members from all parts of the country. Nationally prominent speakers will take an active part in the business meetings.

Dallas pharmacists are planning many special events and amusements for visitors and their families. These include sporting and social events, as well as visits to the EXPOSITION itself.

Meetings scheduled are those of the National Conference of Pharmaceutical Association Secretaries; National Conference of Pharmaceutical Research; American Association of Colleges of Pharmacy; National Conference of Pharmaceutical Law Enforcement Officers; National Association of State Boards of Pharmacy; Plant Science Seminar and the AMERICAN PHARMACEUTICAL ASSOCIATION.

Definite dates for the sessions will be announced later.

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# THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

I have been asked to write an editorial for the following paper by Professor Fiero. Whether you are a teacher of pharmacognosy or of some other course in a school of pharmacy, these papers deserve your attention.

Professor Fiero's paper is on a subject of vital importance from more than one angle. What is taught in any course will determine the interest (or disgust) aroused in the student; it may affect his rating with the state board examiners and it will affect his ability to succeed in related courses.

Some of the results obtained from the questionnaire are surprising and it is regrettable that the author of this paper has not criticised them more severely. There is bound to be a variation in our teaching but what a student in New York needs is not much different from what his cousin in Chicago or Los Angeles needs. A student going to a second school for graduate work may experience a handicap by such variations in the content of our courses.—C. J. ZUFALL.

## THE CONTENT OF A PHARMACOGNOSY COURSE.

GEORGE W. FIERO.*

In the syllabi of a pharmacognosy course and various textbooks on the subject, one finds a vast amount of material under this general classification. Of course, if one considers the original meaning of *pharmacognosy* (from the Greek *pharmakon* and *gnosis*—a knowledge of drugs), the amount of information which could be included is limited only by our present knowledge of pharmacy, pharmacology, phytochemistry, botany and allied sciences.

The question which confronts the instructor is "How much of this information should the prospective pharmacist know?" The course is largely factual. Educational authorities tell us that factual information is not long retained after the course is completed. There are at least 26 points concerning each of over 300 drugs. Should the student be required to commit all of this information to memory?

It would appear that the scope of the course might vary with the drug. For example, an important drug such as opium or cinchona should be treated differently from some of the unimportant drugs. Some instructors, however, treat them all alike. The New York State Syllabus divides the drugs into primary and secondary lists. Unfortunately, the amount of material to be taught concerning each of the drugs in the secondary group is too comprehensive. Some of the district meetings of boards and colleges have prepared a list of drugs upon which the graduate will be examined. It appears to the writer that it is far more important for the student to be entirely familiar with the important drugs at the expense of the unimportant ones.

In order to ascertain what pharmacognosy professors think of the relative value of the several points of information, a questionnaire was sent to them. Fifty-four replies were obtained; the results of the questionnaire may be seen in the accompanying table.

* University of Buffalo, School of Pharmacy.

SURVEY OF CONTENT OF PHARMACOGNOSY COURSES—1935.

| | | Important. | Not Important. | Some.* | Not Taught. | Omitted in Some U. S. P. | All N. F. | Some N. F. | Non-off'l. | O. C.[1] |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Latin title | 54 | ... | ... | ... | ... | ... | ... | ... | ... |
| 2. | English title | 54 | ... | ... | ... | ... | ... | 1 | 1 | ... |
| 3. | Official synonyms | 54 | ... | ... | ... | ... | ... | 1 | 3 | ... |
| 4. | Non-official synonyms | 30 | 23 | 1 | 2 | 2 | 1 | 5 | 5 | ... |
| 5. | Abbreviation | 20 | 17 | 2 | 13 | 3 | 4 | 11 | 10 | 2 |
| 6. | Part used | 54 | ... | ... | ... | ... | ... | ... | ... | ... |
| 7. | Generic and spec. names | 52 | 2 | ... | ... | ... | 1 | 9 | 3 | ... |
| 8. | Author's name | 1 | 17 | ... | 28 | 5 | 8 | 18 | 15 | ... |
| 9. | Family name | 31 | 17 | 3 | 3 | 1 | 3 | 11 | 10 | ... |
| 10. | Standard of strength | 42 | 5 | 4 | 1 | 4 | 3 | 15 | 17 | 2 |
| 11. | Standard of purity | 29 | 18 | 3 | 3 | 6 | 4 | 14 | 16 | 1 |
| 12. | Per cent of ash | 7 | 26 | 4 | 14 | 6 | 7 | 17 | 15 | 3 |
| 13. | Macroscopic description | 38 | 10 | 3 | 3 | 3 | 1 | 14 | 10 | ... |
| 14. | Microscopic description | 24 | 8 | 9 | 11 | 6 | 1 | 17 | 14 | 4 |
| 15. | Powder description | 21 | 11 | 5 | 12 | 5 | 2 | 18 | 15 | 3 |
| 16. | Preservation | 31 | 16 | 2 | 3 | 1 | 1 | 13 | 12 | 2 |
| 17. | Official preparations | 26 | 13 | 1 | 1 | 5 | 3 | 12 | 10 | 9 |
| 18. | Adulterants | 27 | 22 | 4 | 0 | 4 | 1 | 19 | 17 | 1 |
| 19. | Detection of adulterants | 24 | 18 | 4 | 4 | 5 | 2 | 19 | 18 | 4 |
| 20. | Constituents | 29 | 12 | 8 | 1 | 0 | 2 | 2 | 3 | ... |
| 21. | Plant description | 1 | 45 | 0 | 8 | 4 | 2 | 17 | 12 | ... |
| 22. | History | 3 | 46 | 0 | 5 | 4 | 3 | 20 | 19 | ... |
| 23. | Habitat | 13 | 41 | 0 | 0 | 3 | 1 | 11 | 12 | ... |
| 24. | Marketing | 7 | 39 | 0 | 6 | 5 | 4 | 17 | 14 | ... |
| 25. | Average dose—metric 6, both 26, apothecaries 10 | | | | | 2 | 2 | 5 | 5 | 9 |
| 26. | Therapeutic properties —part of pharmacognosy—33 | | | | | | | | 4 | |

A. All 26 points covered with every U. S. P. drug—41.
B. All 26 points covered with every N. F. drug—19.
C. All 26 points covered with non-official drugs—7.
D. Microscopic Pharmacognosy: Separate course 38.
Part of pharmacognosy 19.
Entirely omitted 5.

E. When pharmacognosy is taught:

| | | | | | |
|---|---|---|---|---|---|
| Second year only | 15 | Third year only | 5 | Fourth year only | 2 |
| First and second | 7 | Second and third | 10 | Third and fourth | 6 |
| First and third | 1 | Second and fourth | 4 | First, second and third | 1 |
| First, third and fourth | 2 | Second, third and fourth | 1 | | |

F. Total credits in pharmacognosy (in semester hours):

| | | | |
|---|---|---|---|
| 2.5— 4.5—10 | | Laboratory less than 1/4 | 8 |
| 5.0— 6.0—12 | | Laboratory 1/4 to 1/2 | 20 |
| 7.0— 8.5—10 | | Laboratory exactly 1/2 | 13 |
| 9.0—11.0—11 | | Laboratory more than 1/2 | 13 |
| 12.0—22.0— 9 | | Not answered | 6 |
| ?? — 2 | | | |

* Some—considered important in certain drugs; in others not important.
[1] O. C.—taught in some course other than pharmacognosy.

A majority of the professors concluded that the following points are important; they are arranged in order of relative importance:

Latin and English Title, Official Synonyms, Part Used, Botanical Source, Dose, Standard of Strength, Macroscopic Description, Therapeutic Properties, Family Name, Preservation, Non-official Synonyms, Constituents, Standard of Purity, Adulterants and Preparations.

A majority considered the following unimportant:

Detection of Adulterants, Microscopic Description, Powdered Drug Description, Abbreviation, Habitat, Marketing, Ash, History and Plant Description.

Even though a large majority (52 of 54) pharmacognosists agree as to the importance of the botanical source, the writer takes exception to its value. In other than a few isolated cases, he will never use the botanical source of a drug; will never come in contact with it in dispensing or in selling drugs and preparations. It appears to be a great waste of time and energy to learn over 300 tongue-twisting Latin names when this time could be put to a much better advantage in learning more about the active constituents of the important drugs so as to be able to predict incompatabilities in dispensing. The student should understand the taxonomical relationship of the botanical names and their value in the U. S. P. from a legal standpoint.

In the case of such things as the descriptions, macroscopic, microscopic and powdered, the standard of purity, the per cent of ash, etc., it appears rather foolish to learn all of these points of the U. S. P. or N. F. monograph. They are of value for the determining of identity and quality of the drug. The student, on the other hand, should be thoroughly acquainted with the terms used in the descriptions so that he could identify a drug from the official description. The same is true with regard to abbreviations. The pharmacist does not *write* prescriptions; therefore, he should not be required to learn verbatim abbreviations, but should be able to recognize the abbreviation when he sees it in a prescription.

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## HISTORY OF SCIENCE SOCIETY.

Program of St. Louis Meeting.

*President*, C. A. Browne, Washington, D. C.; *Secretary*, F. E. Brasch, Library of Congress, Washington, D. C.

Thursday Morning, Joint Session with Section on Historical and Philological Sciences (L) and Academy of Science of St. Louis, January 2nd, Mayfair Hotel.

The symposiums are as follows: "Study and Teaching of the History of Science," *Chairman*, George Sarton. "Early Science in St. Louis Area," *Chairman*, Chauncey D. Leake.

Among the participants are: H. T. Davis, Indiana University; L. C. Karpinsky, University of Michigan; U. G. Mitchell, University of Kansas; Robert S. Woodbury, Massachusetts Institute of Technology; Charles A. Morris, University of Chicago; Benjamin Ginzburg, Washington, D. C.; H. L. Gordon, New York, N. Y.; Harcourt Brown, Washington University; Solon Buck, The National Archives, Washington, D. C.; C. A. Brown, *Retiring President;* Robert E. Schlueter, St. Louis; William H. Roever, Washington University; Joseph Grindon, St. Louis; Chauncey D. Leake, University of California Medical School; A. B. Hertzman, St. Louis—"William Beaumont—a Photographic Record;" Jesse Greenman, Missouri Botanical Garden; Charles F. Sherwin, St. Louis.

Many of the subjects discussed are of interest to pharmacists, the paper by A. B. Hertzman is referred to, because the late H. M. Whelpley presented a paper on the subject, published in the PROCEEDINGS A. PH. A., for 1903, pages 560–565. It also deals briefly with research on Pepsin.

## THE NEW U. S. PHARMACOPŒIA, ELEVENTH REVISION.

The U. S. P. Board of Trustees has announced December 16, 1935, as the date for the release of the U. S. P. XI, and June 1, 1936, as the date when its standards shall supersede those of the U. S. P. X. The following comments are abstracted from statements made by Chairman E. Fullerton Cook, of the Committee of Revision.

"In presenting this Revision of the Pharmacopœia to the Country the Committee does so with the confident belief that its scope and standards conform to the objective established by the 1930 Pharmacopœial Convention and that it fulfils the present-day needs in its field for both Medicine and Pharmacy. 'Interim Revisions' with possible annual supplements have been announced by the Board of Trustees."

"It may be interesting to note that the U. S. P. XI contains 565 titles of which about 430 have approved therapeutic usefulness, although many have similarity in action, such as the various quinine salts, the iodides, the bromides, the barbiturates, etc. The remainder are pharmaceutic necessities, including many crude drugs not administered themselves but employed to make dosage forms of medication. These must necessarily be standardized."

"In the list of admissions will be found 131 pharmaceutical formulas, approximately 30 per cent of the list of therapeutic agents. Most of these formulas can be prepared in the retail pharmacy. Among these are cerates, waters, elixirs, extracts, fluidextracts, liniments, solutions, masses, compound powders, spirits, suppositories, syrups, tinctures and ointments.

"The new spelling of sulfate, sulfur, etc., conforming to modern usage, may seem strange at first; most of the changes seem logical, such as the adoption of the universally used 'Saccharin,' the use of 'Posterior Pituitary' in place of 'Pituitary' necessitated by the use to-day of the whole gland and of the anterior lobe. Other changes may seem strange, for instance, the Food and Drug Administration asked that 'Compound Powder of Glycyrrhiza' become 'Compound Powder of Senna' to indicate the more potent constituent, and the physicians of the Committee insisted upon changing the title of 'Compound Mixture of Glycyrrhiza' to 'Compound Mixture of Opium and Glycyrrhiza.' In all of these cases, the synonyms remain and these products will probably always be known by the layman as 'Compound Licorice Powder' and 'Brown Mixture,' respectively.

"The development of two advisory Boards, dealing with the standards for vitamins and for Anti-Anemia Products are valuable new features. The Vitamin Board, having among its members Dr. Mendel of Yale University, Dr. Sherman of Columbia University and Dr. E. M. Nelson, Director of the Vitamin Laboratory of the Government, has rendered an important service. The Vitamin A and D standards, developed by this Board, and announced officially by 'Interim Revision,' have already become universally adopted in this Country, and the 'U. S. P. Reference Cod Liver Oil,' of known vitamin potency, is being distributed throughout the world through the coöperation of the Vitamin Committee of the Health Organization of the League of Nations. The Vitamin Board is now conducting a series of studies of Vitamin $B_1$ Assay methods in which 26 laboratories in this Country and abroad are participating.

"The Anti-Anemia Products Advisory Board consists of Doctors Minot and Castle of Harvard Medical School, Dr. Isaacs, director of the Simpson Institute of Ann Arbor, Dr. Palmer of the Medical Center, New York City, with Dr. C. W. Edmunds, *Chairman*. This Board will indicate liver and stomach preparations which are of Pharmacopœial quality—as indicated by submitted clinical data. This is a new service for physicians which the Pharmacopœia is undertaking."

"International Relations—The U. S. P. XI has adopted a number of International Standards, such as those for Vitamins A and D and for digitalis and those approved by the last Brussels Conference. Throughout the revision the Committee has maintained a most friendly coöperation with the British Pharmacopœial Commission in an effort to harmonize the titles and standard of these two Pharmacopœias."

"Percentage Solutions—A new feature is the suggestion among the 'General Notices of the U. S. P. XI, page 4, that prescriptions, calling for percentage solutions be prepared, when not otherwise directed, by dissolving the substance (if a solid) in accordance with the principle 'weight in volume.' For instance, for a 1 per cent solution, dissolve 4.5 grains of the substance in sufficient of the solvent to measure 1 fluidounce. This follows the custom of most pharmacists

and also the precedent established by the latest British Pharmacopœia, and should establish a uniformity badly needed in prescription practice in this Country."

The Pharmacopœia XI will be on sale December 16th, and replace the Pharmacopœia X, hence all users of the Pharmacopœia will have opportunity for studying the former, therefore references will be made without comment, to items included in the statement by the chairman.

"Alternative Formulas;" "Reference Standards;" "Some Important Revision Changes:" "Increased Strength of Acids," "Ether for Anesthesia and Solvent Ether," "Biological Products," "Camphor and Menthol," "Digitalis," "Emulsions," "Ephedrine," "Ergot," "Bichloride Tablets," "Liver and Stomach Anti-Anemia Preparations," "Solution of Magnesium Citrate," "Ipecac," "Fowler's Solution," "Solution of Sodium Hypochlorite," "Quinine Sulfate," "Sodium Phosphate," "Sapo Durus," "Sapo Mollis," "Glycerin Suppositories," "Antiseptic Iodine Solution," "Tryparsamide," "Ointments," "General Tests, Vitamin Assays, Reference Standards, Reagents, Tests and Standard Solutions, Hydrogen-Ion and Tables;" "Color Standards."

The Committee of Revision and Associates. Under the subhead of the Chairman's Statement, the closing paragraphs are quoted in full.

"When Dr. Lyman Spalding, on February 28, 1818, issued a call for voluntary assistance in the preparation of a Pharmacopœia for the United States, he characteristically described the type of professionally minded and trained scientists who could or would coöperate in the making of a Pharmacopœia. He said they would have to be 'gentlemen, willing to act and men distinguished for their ability and learning.' "

"In this day when intensive commercialism, selfishness and personal ambition largely influence many men, even those associated with the traditionally altruistic professions of medicine and pharmacy, it is gratifying to find those standards of Dr. Spalding, announced one hundred and eighteen years ago, so splendidly realized. The willingness to assume large responsibility by men distinguished for their ability and learning and the continuous and untiring labor of years during those extra hours which were not demanded for their regular, exacting duties, alone make possible a publication like the U. S. P.

"Among the members of the Pharmacopœial Board of Trustees, the Committee of Revision, the auxiliary boards and associated scientists will be found the names of men and women known internationally for their contributions to the latest developments in the medical and pharmaceutical sciences. Only the voluntary-service plan of the Pharmacopœia could command the help and association of those forming this distinguished group."

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**John Uri Lloyd,** president of the AMERICAN PHARMACEUTICAL ASSOCIATION, 1887–1888 and aged 86 years, in writing to the Remington Medalist, S. L. Hilton, said that "things were becoming monotonous," so he, with his daughter and son-in-law, Dr. Welbourn of Los Angeles, visited Japan. While there, he was delightfully entertained, among the hosts, Hajime Hoshi, who has made a return visit.

The latter is head of the Hoshi Pharmaceutical Co. Ltd., Tokyo, Japan, which from a small beginning now owns and controls the greater number of retail stores in Japan and owns the Formosa quinine area.

Mr. Hoshi credits the rapid growth of his pharmaceutical manufacturing and retail selling organization to the careful training of its sales representatives and factory executives; in this training, the Hoshi Commercial School in Tokyo plays an important part. Here, from 150 to 200 young men who desire to enter the pharmaceutical profession are trained under competent instructors, not only in the profession of pharmacy, but also as expert salesmen and factory supervisors.

To encourage young men to enter the profession of pharmacy, a selective plan is employed to provide group managers and factory supervisors. A record is kept of their graduates from the time they enter the school and all through their work in the field. The men who show themselves to be best fitted for this type of work are promoted to the higher executive positions.

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A Joyful Christmas and a Successful New Year.

# PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meeting of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter. *Please advise us of changes in Roster and mail reports promptly.*

## BALTIMORE.

The regular monthly meeting of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held on December 12th, at the Hotel Emerson. The meeting was called to order by President Wm. F. Reindollar. A short business meeting was held prior to the introduction of the speaker of the evening.

The secretary read a communication from Dr. A. Ziefle, chairman of the Committee on Local Branches of the AMERICAN PHARMACEUTICAL ASSOCIATION concerning the pending matter of the allocation of one dollar yearly by the parent organization to the Local Branches for each member, the annual dues of the Local Branches to be dispensed with. It was moved and seconded, "that the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION go on record as approving the recommendation before the Council concerning the rebate of one dollar per member for Local Branches." This motion was approved. Chairman Ziefle will be informed of the action taken in this matter.

The secretary read further in Dr. Ziefle's letter concerning membership in the Local Branches as restricted to members in the parent body. Since it has been the custom for years in the Baltimore Branch to admit to membership non-members of the A. PH. A., it was moved by the secretary and seconded, "that the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION formally extend the privilege of membership to non-members of the AMERICAN PHARMACEUTICAL ASSOCIATION. Such members to pay the yearly dues of one dollar and further that the Baltimore Branch attempt to interest all such local members in membership in the parent organization." Approved.

The secretary read communications from Dr. Ernest Little, Dr. E. F. Kelly and the report of the Committee on Resolutions of the A. PH. A. as submitted at the Portland Meeting. No action was taken by the Branch concerning these communications.

New business introduced at this meeting was as follows: "In view of the fact that the officers of the Branch have for the past several years been totally unsuccessful in arranging program meetings that attracted an attendance of members that was not embarrassing to the speaker and members present and because very few retail pharmacists ever attended the meetings, the following motion was made: 'That the President appoint, at this meeting, a special committee of three active members of the Branch to present before this organization at the next meeting a report of a survey of the membership to consist of the following—To determine by vote the advisability of dissolving the Baltimore Branch of the A. PH. A.; if this is not advisable to determine if possible, what type of meetings and how many a year are desired by the membership.' " It was moved by Carr, seconded and carried. President Reindollar appointed to this special committee: C. Jelleff Carr, *Chairman*, Glenn L. Jenkins and Simon Solomon. President Rein-

dollar appointed as the chairman of the Nominating Committee, Simon Solomon, the two other members of this committee are to be selected by the chairman.

President Reindollar introduced the speaker of the evening, Dr. W. C. Harden, Research Chemist, Hynson, Westcott and Dunning, Baltimore, Md. Dr. Harden selected for his topic, "Organic Antiseptics with reference to Structure, Physical and Bactericidal Properties." The speaker gave a brief review of the history of antisepsis pointing out the compounds that were first used as germicides and stated that he would limit his discussion to those compounds related to the aromatic phenols. It was shown how the chemist starting with simple alkyl phenols prepared vast numbers of substances related to the alkyl resorcinols and the alkyl phenolic ethers and how the remarkably high phenol coefficients of modern antiseptics are achieved. Dr. Harden described the studies on the effect of alkyl groups on bactericidal activity when combined in phenolic compounds, the effect of molecular weight on bactericidal activity and how salt formation rendered these extremely potent compounds practically inactive. Finally, he raised such interesting questions as, does the molecular weight or physical property of a compound play the most important part in determining bactericidal action? And how can the chemist prepare compounds that are destructive to bacteria and still harmless to humans? A general discussion followed. A rising vote of thanks was tendered Dr. Harden.

C. JELLEFF CARR, *Secretary-Treasurer.*

## ORGANIZATION OF STUDENTS' AUXILIARY OF THE MARYLAND PHARMACEUTICAL ASSOCIATION AT THE SCHOOL OF PHARMACY OF THE UNIVERSITY OF MARYLAND.

At the annual convention of the Maryland Pharmaceutical Association held in June 1935, the Constitution and By-Laws of the Association were amended to provide for a Students' Auxiliary to be organized at the School of Pharmacy of the University of Maryland.

This Students' Auxiliary is formed for the purpose of familiarizing students of pharmacy with the conditions existing in and problems confronting their profession; to promote closer contact between the pharmacist and the student of the profession; and to provide early training in organization work.

The first meeting was recently held at the School of Pharmacy, with Dr. M. R. Thompson, Professor of Pharmacology as the presiding officer. Dr. Glenn L. Jenkins, Professor of Pharmaceutical Chemistry, presented a short history of the Maryland Pharmaceutical Association and the purpose of the Students' Auxiliary. Constitution and By-Laws were adopted.

The following are the officers for 1935–1936: *President,* P. H. Thompson; *First Vice-President,* J. R. Karns; *Second Vice-President,* W. Gakenheimer; *Secretary,* Miss S. Glickman; *Treasurer,* R. Thompson; *Editor,* R. V. Robinson. *Executive Committee:* A. Tramer, G. A. Mouat, G. Kelley, M. R. Thompson, Frank J. Slama.

The members of the Students' Auxiliary will regularly receive the monthly publication of the Maryland Pharmaceutical Association—*The Maryland Pharmacist.*

## CHICAGO.

The regular monthly meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held November 22nd, at the University of Illinois College of Pharmacy.

The speaker of the evening was H. S. Noel, Assistant Director of the Advertising Department of Eli Lilly & Company, and Editor of *Tile and Till.* Mr. Noel spoke on "The Future Outlook for Financial Success in Pharmacy."

At the opening of the meeting Mr. Emig, of the University of Illinois College of Pharmacy, gave a review of the outstanding articles in the last JOURNAL OF THE A. PH. A.

This report was well received and called for many discussions from the audience.

Mr. Noel began his discussion by contrasting in retrospect the years 1935 and 1900. A store in one town that did $3750.00 business in 1900 did $14,000.00 worth of business in the year 1935. This shows that the diversity of items sold in the drug stores to-day has greatly increased the volume of business. He stressed the value of the personality of the owner and clerks in building up and retaining business.

The Lilly Drug Store Survey was begun in Virginia in 1922. In 1932 there were 272 reports from retail druggists as compared to 402 in 1933 and 394 in 1934. Mr. Noel reported

that the greatest trouble found in getting reports from the druggists was that they do not keep accurate and complete business records, or in many cases none at all.

Figures were shown that would leave the owner of the average store a net return of 6% on sales. The faults named as the cause for this low percentage of profit were, the high cost of merchandising and the lack of proper control over drug store expenses. It was added that profit can be lost through carelessness and through inability to get a turnover on merchandise.

Nine essentials were named as a prerequisite to a profitable drug store. They are:

1. Importance of a buying budget.
2. Importance of an annual inventory.
3. Orderly and clean stock.
4. Accurate records.
5. Daily verification of sales and expenses.
6. Importance of taking cash discounts.
7. Avoidance of wastes.
8. Trained help and allocation of responsibility.
9. Concentration of purchases to a few sources of supply.

At the conclusion of the discussion Mr. Noel answered many questions and gave added information to those interested.

LAWRENCE TEMPLETON, *Secretary-Treasurer.*

## NEW YORK.

The November 1935 meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held November 11th at the College of Pharmacy, Columbia University. About forty-five members and their guests were present.

The secretary read the report of the October meeting and the report of the special meeting in Washington, the occasion of the Remington Medal presentation to Dr. Samuel L. Hilton. Both reports were accepted.

Chairman Lehman, of the Committee on Legislation and Education, rendered the following report:

*National Legislation.*—As the United States Congress is due to convene in two months and the Legislative Machinery is being set in motion as far as pharmaceutical interests are concerned, the following program is being organized:

An enabling act is being sponsored by the National Association of Retail Druggists and allied organizations. This will amend the Clayton act as follows: "Provided that nothing herein shall render illegal, contracts or agreements prescribing minimum prices for the sale or resale of a commodity which bears the trade-mark, brand or the name of the producer or owner of such commodity and which is in fair competition with commodities of the same general class produced by others, when such contracts or agreements are lawful under any statute now or hereafter in effect in any state, territory or the District of Columbia in which such sale or resale is to be made, and the making of such contracts or agreements shall not be an unfair method of competition under Section 45, Title 15, U. S. C."

This would permit resale price agreements in such states as have passed Fair Trade Laws.

It will be introduced in the Senate by Senator Tydings, Maryland.

The Patman Bill will be reintroduced, which provides that no special or quantity discounts shall be allowed, which are not given on all purchases, large or small.

The Copeland Pure Food and Drug Law will come up again, perhaps in a slightly altered form, and it is hoped that it will pass this time.

Every employer of eight or more persons is subject to the new Pay-roll and Wage Taxes. On and after January 1, 1936: for the Calendar year 1936 the tax is 1%, 1937, 2%; after December 31, 1937, 3% on the Wage Tax. The Pay-roll Tax only becomes effective on January 1, 1937, and starts with 1%, with graduations every three years until it reaches 3%. These assessments are designed to provide old-age pensions, etc., in the future.

Every manufacturer of Toilet Preparations must make monthly returns in duplicate to the Bureau of Internal Revenue, and pay a 10% tax. This includes all non-official preparations, also mixtures of official drugs, such as, for instance, Rose Water and Glycerine. The list embraces

Hair Tonics, Hair Restorers, Hair Dyes, Wave Setting Fluids, Rouges, Face Powders, Face Lotions, Skin Cleansers, etc., etc.

The Federal Trade Commission is proceeding against manufacturers of inferior rubbing alcohols, especially where such compounds do not contain ethyl alcohol as a base, or where the ethyl alcohol content is negligible. Several Chicago concerns have agreed to cease and desist.

The New York State Fair Trade Law is gaining more support on the part of wholesalers and manufacturers daily. Over fifty manufacturing firms have agreed to issue contracts which have now been approved by the Fair Trade Committee of the New York State Pharmaceutical Association, and seven wholesalers have prepared omnibus contracts.

Frederick C. A. Schaefer, Branch delegate to N. Y. Pharmaceutical Council, reported that a great mass meeting of retailers had been held on October 28th, to discuss ways and means of encouraging manufacturers and retailers to sign the Fair Trade Contracts. The meeting was a great success, being attended by about 2000–2500 persons.

Chairman Steiger, of Progress of Pharmacy Committee, reported the following:

"A short paragraph in Lilly's *Tile and Till* is devoted to cyanide poisoning. It is stated that 243 deaths were recorded by cyanide poisoning in 1931 and that this figure rose to 416 in 1933. The new method of reviving persons who have taken cyanide consists of successive injections of sodium nitrite and sodium thiosulphate into the patient's veins. This combination is reported to be ten times as effective as methylene blue."

Most suicides do not choose a too certain death, and the proportion using cyanide will probably increase as the news of these new antidotes is published.

The *Oil, Paint and Drug Reporter*, for October 28th, reports that chlorophyl made in the United States is now offered commercially by "American Chlorophyl Inc.," Washington, D. C. The company is also offering to the food and drug industries Carotene and Xanthophyl, as well as combinations of the three chloroplast pigments. For some time the company has been supplying these products to universities and laboratories for scientific use.

The *Oil, Paint and Drug Reporter*, of November 4th, announced that George Brean & Co., pharmaceutical manufacturers of Kansas City, has been given the decision in a suit against it by the Wisconsin Alumni Research Foundation, alleging infringement of a patent on the use of copper with iron in the treatment of anemia. The basis of the Court's decision was the conclusion that the subject matter of the Hart patent had been anticipated by numerous foreign publications dating back to articles by L. Mandini of Venice in 1862.

The *Drug Trade News*, of November 11th, reports that Spencer Kellogg & Sons, Inc., have developed a castor oil which, it is claimed, will not offend the most delicate sense of taste and smell.

In a paper read before the American Public Health Association, Drs. Robinson and McKahm reported that purified placental extract prevents measles. In many ways, Dr. Robinson points out this means of combating measles is merely the revival of an old heathen custom. Many centuries before the present development in medicine, it was customary to dry the placenta. If a child became ill, he might be given some of his own placenta.

A new, economically produced skin disinfectant, known officially as "a compound alcoholic solution of mercuric chloride" has been developed by two investigators at the University of Illinois, Department of Bacteriology and Health. It is reported to contain 50% ethyl alcohol, and varying proportions of acetone, mercuric chloride, hydrochloric acid, chrysodin and distilled water. It is described as 350 times as powerful in killing germs as phenol, three times as powerful as tincture of iodine, etc., and other widely used skin disinfectants; it is said to be easily prepared. Each ingredient was added for a definite purpose. The alcohol serves to increase penetration, acetone to remove fats always present on the skin and coloring matter was added to show the "field" or area of skin covered by the disinfectant.

Under the heading of old business, the secretary referred to the letter received from the Comptroller's office of the City of New York. After a brief discussion it was decided to leave the matter as is.

Dr. Ballard then reported that cards, urging the election of two Branch members, namely, Dr. J. Leon Lascoff and Dr. Robert P. Fischelis to offices in the A. Ph. A., had been mailed to all Branch members.

Under new business, Dr. Ballard suggested that a letter of thanks be sent to Augustus C.

Taylor, Washington, for arranging the successful dinner in honor of Dr. Hilton. This was placed in the form of a motion by Dr. H. V. Arny, duly seconded and approved.

A communication from Dr. Ernest Little was then read. This called attention to Dr. Little's article on increasing ASSOCIATION membership, which was recently published in the JOURNAL.

Before proceeding to the Scientific Session, President Ballard called attention to the fact that the next Branch meeting would be held in the Brooklyn College of Pharmacy, Long Island University.

Dr. Ballard then introduced the speaker for the evening, Dr. Louis Faugeres Bishop, Jr., who spoke on "Coronary Artery Disease." An abstract of Dr. Bishop's address follows:

In the general problem of heart diseases, that of the coronary artery is the most important part. The oldest case on record for this type of heart disease is that of Buddha in 400 B.C. Coronary thrombosis is a frequent cause of death among the higher intellectual groups, and the death of former President Coolidge as well as Billy Sunday was due to coronary thrombosis.

Methods of prevention center around a better understanding by the layman of the causes and consequences. Coronary thrombosis is on the increase and this is likely due to the present type of life. Although most cases occur in people past middle age, younger people have also suffered.

Before continuing with his address, Dr. Bishop showed a motion picture film of the human heart. He pointed out the two coronary arteries, which supply blood to the heart. The motion pictures were really remarkable in that they very plainly showed the heart action through two complete cycles in which each step was being recorded on a graph by means of the electrocardiograph. The electrocardiograms of both normal and pathological heart conditions were shown.

Continuing with his discussion, Dr. Bishop stated that in pathologic conditions the left coronary artery was the most important. The patient begins to complain of pain, after eating, exertion, emotion or excitement. This pain, *Angina pectoris*, is of course, a symptom and not a disease. The pain may run from heart to left arm, to the teeth, to the abdomen and to the chest. Numerous conditions can bring on this pain, and in this connection Dr. Bishop cited some interesting cases from his own experiences.

There are many theories explaining the cause of *Angina pectoris* and best opinion indicates that the deficient blood supply to the heart is responsible.

Sometimes persons suffering from coronary artery disease, show no history of pain, but complain of shortness of breath, others experience vague stomach symptoms and in some cases no symptoms at all are noted, and the pathologic condition can only be discovered by means of an electrocardiograph.

Now the symptoms just discussed indicate an incomplete obstruction in the flow of blood to the heart muscle. An accident may occur and bring on thrombosis when the supply of blood to one part of the heart is cut off. In this case continuous pain is experienced. Shock results, the blood pressure falls and treatment for shock must be immediately instituted.

Thrombosis occurs usually in individuals between 50 and 60 years of age. However, Dr. Bishop mentioned that he had seen cases in patients from 34 to 70 years of age. It occurs more in males than in females, the proportion being about 3 or 4 to 1. Occasionally it is difficult to recognize thrombosis and early diagnoses have sometimes proved to be false. Coronary thrombosis usually occurs in the left descending branch of the coronary artery. Since the heart is supplied by two arterial branches, a block in one does not completely cut off the blood supply to the heart muscle. The portions of the heart supplied by each branch were carefully shown in lantern slides. It was pointed out that there are portions of the heart muscle supplied by both arterial branches.

The importance of comparative records, before and after an attack of thrombosis was especially emphasized.

In discussing treatment, Dr. Bishop divided the procedure into two parts, one before thrombosis, the other after coronary thrombosis.

*1. Before Thrombosis.*—The examination of patient and placing him under a physician's care already serves to improve the patient. Drugs, as nitroglycerin, are especially recommended

and the patient should carry some with him for emergency use. The life of the individual should be regulated to avoid emotion and excitement. Diet does not require regulation as to kind but as to quantity, less should be eaten at one time. The purine drugs, as Theophylline and Theobromine and their salts, find a place but it is sometimes difficult to evaluate their benefit.

*2. After Coronary Thrombosis.*—The treatment is different. A long period of rest must follow. Recovery from the first attack occurs in 80–85% of the cases. A spirit of optimism must be instilled in the patient. New blood vessels form in the heart and patients have lived 17 years after the first attack.

After a severe attack, the treatment for shock is most important. For this morphine is very valuable, occasionally, oxygen is also employed.

Finally, in discussing future prevention, Dr. Bishop called attention to the health rules laid down by Commissioner Rice. These rules emphasized better living, more rest, less cocktails, avoid nervous excitement, learn to relax and how to spend leisure time free from worry and excitement.

President Ballard thanked the speaker for his lucid and understandable discussion and asked the audience if there were any questions.

Dr. Bilhuber responded by asking the speaker the place of digitalis, caffeine and alcohol in the treatment of coronary artery disease.

In reply Dr. Bishop stated that digitalis requires careful use. In congestive heart failure, digitalis is useful. It is usually not used after coronary thrombosis. Alcohol has a definite place, being useful in *Angina pectoris* where it acts like nitroglycerin. Its danger lies in the coincidental reactions as stimulation of appetite with danger of overeating. It is a mistake to deprive older people of alcohol. Caffeine is the best stimulant for shock. Dr. Bishop claimed no experience with the use of caffeine in *Angina pectoris*.

Dr. Lascoff asked a question concerning the use of adrenalin. In reply Dr. Bishop stated that the blood pressure falls far and fast in coronary thrombosis. In such cases adrenalin helps to get over the critical or shock period; it should be used with care.

Answering several other questions, Dr. Bishop stated that he had had no experience in the use of calcium for coronary artery disease, and that false or pseudo *Angina pectoris* was simply a general name applied to pain in the chest which might be due to a variety of causes.

There being no further questions, a rising vote of thanks was accorded the speaker and the meeting adjourned.

RUDOLF HAUCK, *Secretary.*

## PHILADELPHIA.

The December meeting of the Philadelphia Branch, AMERICAN PHARMACEUTICAL ASSOCIATION, was held in the auditorium of the Philadelphia College of Pharmacy and Science, December 10th, E. H. MacLaughlin presiding.

Donald C. A. Butts, director of the Emery Laboratories of Cancer Research, and affiliated with the Philadelphia College of Pharmacy and Science, Saint Luke's and Children's Hospitals of Philadelphia, was introduced as the guest speaker. He spoke on "The Past, Present and Future of Cancer Research," and gave the high lights of the advances made in cancer research from the year 1500 B.C. to the present day. A brief discussion of some of the more important theories and researches on cancer was presented.

Mr. Butts pointed out that cancer was definitely on the increase. He enumerated upon the three most effective weapons against cancer, namely: Surgery, radium and X-ray treatments; lantern slides and moving pictures were shown to illustrate how cancer researches were carried out.

The meeting was then thrown open for discussion, and Dr. Frederick James, professor of Histo-Pathology, and director of the Isaac Dorr Research Laboratory of Temple University, School of Dentistry, lauded the speaker for his most interesting lecture.

GEORGE E. BYERS, *Secretary.*

## PITTSBURGH.

A meeting of the Pittsburgh Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held November 9th.

The meeting was called to order, in the main lecture room of the Falk Clinic at 8:00 P.M., by acting chairman, Frank S. McGinnis.

The minutes of the last regular meeting were read and approved.

Mr. McGinnis appointed the following nominating committee to report at the December meeting: C. T. Van Meter, A. F. Judd and E. C. Reif, *Chairman*.

A splendid report of the 83rd annual convention, held at Portland, Oregon, was presented by Delegate C. Leonard O'Connell.

The chairman called on Louis Saalbach to tell about the progress of the National Formulary revision. Dr. Saalbach, serving as vice-chairman of the National Formulary Revision Committee, indicated that the new N. F. would soon be ready for release.

The past-presidents of the Pittsburgh Branch were called on in order and each contributed interesting information.

The program of the evening was presented by the Department of Pharmacy of the University of Pittsburgh, School of Pharmacy. A demonstration was made by the staff members of the manufacturing equipment installed in the Pharmacy of the Falk Clinic.

Among the new installations in the manufacturing department is a Colton 2-B single punch tablet machine; an ointment mill and complete equipment for filling and closing ointments in tubes. A twenty-gallon tumble barrel is in operation, together with all the equipment needed for granulating substances for tablets.

Among the many interesting demonstrations was the apparatus used for filling tubes with ophthalmic ointment, and the technique involved in preparing sterile solutions in bulk packages.

A very entertaining and instructive program was presented by the Pharmacy staff.

STEPHEN WILSON, *Reporter*.

## ST. JOHN'S UNIVERSITY STUDENT BRANCH.

The regular monthly meeting of the St. John's Univerisity Student Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held on Friday evening, November 22, 1935. The meeting was called to order by the treasurer, Andor Hacker, who acted as chairman. A group of fifty, including members, students, guests and members of the faculty were present.

The treasurer submitted a report covering the year 1934–1935 showing a balance of $7.50.

Dr. Victor Fourman, Chief Chemist of Campagnie-Parento, was introduced. He announced as his subject:

### THE PRODUCTION AND USE OF OTTO OF ROSE.

Dr. Fourman dealt with the history of rose oil and rose water, pointing out that according to one authority the province of Faristan was required to pay an annual tribute of 30,000 bottles of rose water to the Treasury of Bagdad as far back as 810 A.D. "The town of Kazanlik," he said, "has been the center of the industry for the past 300 years." With the aid of a motion picture the lecturer then described the cultivation and harvesting of the roses and the apparatus used in the production of the oil. He pointed out that nearly two tons of flowers were needed to produce one pound of oil.

The chemical composition of the oil is very complex, pointed out Dr. Fourman, indicating that at least thirty constituents have been found and estimating that there might be twenty others present. At this point Dr. Fourman displayed an "original vase" of the Bulgarian oil, showing the government stamps and seals affixed. Great interest was shown in this and in the lecturer's collection of pseudo-rose oils. The value of the oil varies greatly and depends on the amount of natural otto it contains, it was pointed out.

In the discussion that followed the lecturer discussed the value of congealing point as a test for purity, pointing out that since this factor varies even with pure oils, it is of little use. In discussing the quality of rose water sold in drug stores, Mr. Orris pointed out that reputable manufacturers use natural otto in making the so-called fluid rose soluble. In answer to a question, the lecturer pointed out that in his opinion, there is no scientific explanation for the empiric practice of preserving rose water and stronger rose water by stoppering the bottles with a pledget of cotton.

A rising vote of thanks was extended Dr. Fourman and to Compagnie-Parento for the interesting lecture and demonstration.

DOROTHY CIMAROSA, *Acting Secretary*.

# ASSOCIATION BUSINESS

## AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1935–1936.

Office of the Secretary, 2215 Constitution Ave., Washington, D. C.

### LETTER NO. 9.

November 29, 1935.

*To the Members of the Council:*

*53. Flexible Leather Binding for N. F. VI.* Motion No. 12 (Council Letter No. 8, page 1036) has been carried and the retail selling price is set at $6.00 per copy.

Dr. Fischelis wrote as follows:

> "I am voting *no* on Motion Number 12 because I believe the price of the National Formulary and the U. S. P. to the trade is too high. You will recall that I recorded myself in the negative when the original price was voted on and I am voting *no* on Motion Number 12 for the same reason."

*54. Special Committee on Emblem.* Motion No. 13 (Council Letter No. 8, page 1036) has been carried and the Mellon Institute is granted permission to use the A. PH. A. emblem under the conditions mentioned.

*55. Use of Text of N. F.* Motion No. 14 (Council Letter No. 8, page 1037) has been carried and Mr. McClintock has been advised.

*56. Election of Members.* Motion No. 15 (Council Letter No. 8, page 1038) has been carried and applicants for membership numbered 44 to 101, inclusive, are declared elected.

*57. Meeting of the Council.* All members of the Council have responded and a majority have indicated a preference for Thursday, December 5th, as the date of the coming meeting. Chairman Hilton has, therefore, called the meeting of the Council at the AMERICAN INSTITUTE OF PHARMACY, on Thursday, December 5, 1935, beginning at 10:00 A.M. It is expected that a morning, an afternoon and an evening session will be necessary. It is hoped that each member of the Council can arrange to be present.

E. F. KELLY, *Secretary.*

### LETTER NO. 10.

December 10, 1935.

*To the Members of the Council:*

The second meeting of the Council for 1935–1936 was held at the AMERICAN INSTITUTE OF PHARMACY, Washington, D. C., on Thursday, December 5, 1935, beginning at 10:15 A.M., in response to the call of the chairman and to the action of the Council (see Council Letters No. 22 (1934–1935), Item 142; No. 8 (1935–1936), Item 51, and No. 9, Item 57). Morning, afternoon and evening sessions were held and the following members were present: Hilton, Arny, Christensen, Cook, Costello, Delgado, DuMez, Dunning, Eberle, Fischelis, Hayman, Holton, Kelly, Philip and Swain.

Messages were received from Walter D. Adams, J. H. Beal and C. H. LaWall and, on motion of Hayman-Cook, the secretary was requested to express to these gentlemen the regrets of the Council that they could not be present.

*58. Report of the Committee on Finance.* Chairman Philip submitted a verbal report reviewing the financial status of the ASSOCIATION. Disbursements under the budget for 1935 had been kept below appropriations in most instances and did not exceed receipts. It had been necessary, however, to allow some bills to accumulate because of the low receipts from N. F. V and R. B. II for the year, because of the cost of completing the N. F. VI and because of the delay in issuing it. The accumulated bills will be paid after the issuance of N. F. VI.

Attention was called to the increased expense of the revision of the N. F. and to the difficulty of maintaining a balanced budget because receipts and expenses over a decade varied so greatly from the estimates. The same difficulty was experienced with the YEAR BOOK and with the JOURNAL and it is expected that with the completion of the YEAR BOOK series in 1936 and with

the publication monthly in the A. PH. A. JOURNAL of the material heretofore appearing in the YEAR BOOK, a more accurate budget for these publications can be worked out and maintained.

The returns from dues had shown an increase and the committee believed that the ASSOCIATION had passed through recent conditions very satisfactorily.

*National Formulary.*—Particular attention had been given by the Committee to the finances of the National Formulary and to the recommendations of the Committee on N. F. as submitted in its annual report to the Council at Portland. It was believed that the program of continuous revision as approved, will serve to largely equalize the previous variations in annual expenses over the decade and to stabilize the annual budget. However, the annual receipts are greatest during the first years of the decade and gradually decline. The suggestion that a fixed amount of the receipts from each copy of N. F. VI sold be set aside in a separate fund for N. F. revision and that this fund which should be estimated on the basis of copies sold during the preceding decade, should be budgetted equally over the decade, was approved as the best means of meeting the situation. After the cost of production and the fixed amount for revision are deducted from the receipts, the balance will be equally divided, as heretofore, between the Research Fund and the Current Fund, so that $^2/_3$ of net receipts will be devoted to research and revision.

(*Motion No. 16*) After a general discussion of the proposal, it was moved by Costello that one dollar of the return from the sale of each copy of N. F. VI be allocated to the expenses of the Committee on N. F. and be placed in a separate fund for that purpose. The motion was seconded by Philip and carried.

Chairman Philip stated that on the basis of the sale of N. F. V, this special revision fund covered by Motion No. 16 would amount to approximately $50,000.00 or to about $5000.00 per year over the decade. On this basis, Chairman Gathercoal had, upon request, suggested the following general budget for N. F. revision for 1936:

| | |
|---|---|
| Clerical expenses | $1100.00 |
| N. F. bulletin | 500.00 |
| Supplies and miscellaneous | 200.00 |
| Chairman's traveling expenses | 400.00 |
| Publicity and exhibits | 300.00 |
| Investigation and revision | 2500.00 |

(*Motion No. 17*) After discussion, it was moved by Dunning that the budget for N. F. revision as suggested by Chairman Gathercoal be approved for inclusion in the ASSOCIATION'S Budget for 1936 with the understanding that only so much of the appropriation as is required or is available will be expended. The motion was seconded by Arny and carried.

*Committee on Research.*—The Committee on Finance approved the award for 1935–1936 of $1500.00 from the Research Fund for research on the subject of tests and assays for (*a*) N. F. ampul solutions; (*b*) N. F. tablets, as recommended by the Committee on Research in its report to the Council at the Portland meeting (see A. PH. A. JOURNAL, August 1935, page 702, Item 136).

In this connection, Chairman Arny called attention to the expectation, as expressed in the report, that this grant will be renewed for a second or even a third year following the precedent that a comprehensive piece of research should be carried on for as long as three years if the results justified it. There followed a lengthy discussion of the Research Fund and of the work of the Committee on Research with particular reference to whether the grants should be made for basic research or for research bearing directly on the N. F.

Although no action was taken, it was the general opinion that the present method of increasing the Research Fund, as separate from the N. F. revision fund, should be continued, that the Committee on Research should continue to recommend the research awards and that awards should be made in accordance with Article XII of Chapter IV of the By-Laws of the ASSOCIATION.

*Appropriations for the Section on Practical Pharmacy and Dispensing and for the Committee on Pharmacy Week.*—Chairman Philip stated that the Committee was not prepared to submit a report with respect to these appropriations as further information was to be furnished by the Section and by the Committee.

*Budget for 1936.*—Upon inquiry, Chairman Philip stated that the Committee on Finance was not prepared to submit the budget until definite action had been taken on several matters to be considered by the Council at this meeting and until the Committee was more fully informed as

to the probable receipts from dues, and from the N. F. It was expected that the budget would be submitted by mail later in the month.

*59. Sale and Exchange of Bonds.* Treasurer Holton stated that U. S. Treasury Bonds, 2¼%, 1945–1947, dated September 15, 1935, had been received for the following funds and placed in the Treasurer's safe-deposit box (see Council Letters Nos. 2, Item 19; and No. 3, Item 21):

| | | | |
|---|---|---|---|
| Endowment Fund | $2000.00 | Research Fund | $7000.00 |
| Centennial Fund | 2000.00 | Procter Memorial Fund | 200.00 |
| Life Membership Fund | 6100.00 | Remington Honor Medal Fund | 100.00 |

*60. Report of Committee on Publications.* Chairman DuMez submitted a verbal report dealing with the following subjects:

*A. Ph. A. Journal.*—The arrangements for publishing the JOURNAL were reviewed, and after a general discussion, the Committee was requested to obtain bids, as heretofore, on the publication of the JOURNAL for 1936, on motion of Fischelis-Holton.

*Year Book, Volume 23.*—The manuscript for this volume is now completed and bids were being secured for its publication and distribution. This volume covers the calendar year 1934 and will be the last issued. Arrangements had been made to print 300 extra sheets of the Pharmaceutical Abstracts for 1935 and these can be supplied in bound form if desired.

*Pharmaceutical Abstracts.*—The original program was to print 32 pages of Abstracts in each issue of the JOURNAL (see JOURNAL, April 1935, page 332). On account of the larger number of Journals being abstracted and the improvement in the abstracting, it was necessary to increase the number of pages to 40 in recent issues and under this arrangement, the material is accumulating with the indication that 48 pages will be required if all available material is published. Since March, the average monthly cost for the abstract pages and index, was approximately $250.00 and the increase to 48 pages will raise the cost proportionately. The annual cost of 48 pages is estimated as $3600.00 for printing and $900.00 for abstracting and editing, or a total of $4500.00 which will require an increase in the budget for the JOURNAL.

The possibility of decreasing the abstracts in number to avoid duplication with other abstract publications, and in space required, was considered at length and the Committee was requested to study this method of meeting the increasing expense. The favorable reception of the abstracts in the monthly JOURNAL was noted and every effort will be put forth to make this section of greater service.

(*Motion No. 18*) It was moved by DuMez that 48 pages of Pharmaceutical Abstracts be published monthly in the JOURNAL, beginning with the issue for January 1936. The motion was seconded by Hayman and carried.

(*Motion No. 19*) It was moved by Swain that a study be made of the possibility of saving expense by publishing the abstracts in a separate volume as originally suggested, to be sent only to those members requesting it, and also of the advisability of making a charge for the abstract journal. The motion was seconded by Dunning and carried.

*Proposed Publication.*—In accordance with the motion under Item 142, JOUR. A. PH. A., August 1935, page 704, further information about the publication had been collected and submitted to the Committee on Publications with a questionnaire requesting an opinion on a number of basic questions. However, a report was not available at this time on policy or budget, and it was suggested that the material submitted to the Committee be studied by the Council as a basis for action.

The meeting then adjourned until 2:00 P.M., with the understanding that consideration of the proposed publication would be the order of business.

(Afternoon Session.)

The attendance was the same as for the morning session.

By request, the secretary reviewed the reports of the Special Committee on YEAR BOOK in which it was recommended that a popular publication should be established, the consideration given the recommendation since that time, especially at the last annual meeting, and the information about cost, size and character of the publication as submitted to the Committee on Publications.

The subject was discussed at length but the data available was not believed to be sufficient for definite action.

(*Motion No. 20*) It was moved by Swain-Costello and carried that the chairman appoint a Committee on Ways and Means to study the financing, and a Committee on Contents, Scope and Style to study the character of the proposed publication, both committees to be requested to report within three months.

*61. Committee on Pharmacy Week.* Chairman Hogstad appeared to present a series of recommendations with respect to the future conduct of Pharmacy Week, which were generally discussed.

(*Motion No. 21*) Chairman Hogstad was requested to revise and submit the recommendations for final consideration, on motion of Arny-Hayman, and he and his associates were given a vote of appreciation for the success of the recent observance.

*62. A. Ph. A.-N. A. R. D. Joint Committee.* Secretary Kelly reported for the three A. PH. A. delegates that it was planned to have a meeting of the Joint Committee as soon as convenient to the N. A. R. D. delegates. At the present time, no definite report could be submitted.

The meeting then adjourned to meet at 7:30 P.M.

(Evening Session.)

The attendance was the same as for the afternoon session with the exception of H. A. B. Dunning who was called away.

*63. Reduction in Nominees for the Presidency.* The nomination and election of officers of the ASSOCIATION was considered at length.

(*Motion No. 22*) It was moved by Arny that the Council recommend to the Special Committee on Constitution and By-Laws that the nominees for president, and for first and second vice-president be reduced from three to two in each case. The motion was seconded by Costello and carried with Fischelis voting in the negative.

(*Motion No. 23*) It was moved by Philip, seconded by Holton and carried, that the Council recommend to the Special Committee on Constitution and By-Laws, that the By-Laws be so amended as to authorize and direct the Council to fill any vacancies that may occur by resignation, sickness, death or otherwise in the list of nominees for the mail ballot.

*64. Committee on Proprietary Medicines.* The secretary reported that J. H. Beal had declined because he could not undertake the work, to act as chairman or as a member of the Committee and the chairman stated that as the membership has been elected by the Council in session, he did not feel authorized to fill the vacancy by appointment. (Council Letter No. 1, JOURNAL, August 1935, page 706, Items 13 and 14.)

(*Motion No. 24*) Roy B. Cook was elected Chairman of the Committee on motion of Costello, seconded by Delgado and carried.

H. H. Schaefer was elected a member of the Committee on motion of Fischelis, seconded by Arny and carried.

*65. Approval of N. F. VI.* The secretary reported that bound copies of the book would be mailed on December 9th to the members of the Council and to the members of the Committee on N. F. for formal approval in advance of the release of the book for distribution on December 16th.

Two unbound copies were submitted to the members present for inspection.

(*Motion No. 25*) It was moved by Swain that the Council approve the work of the Committee on National Formulary as represented in the printed copies of N. F. VI submitted, and authorize its publication. The motion was seconded by DuMez and carried.

*66. Resolution by the N. A. R. D.* President Costello read the following letter addressed to him by Secretary Dargavel:

"At the annual convention of this ASSOCIATION held in Cincinnati, September 23rd to 27th, a resolution was adopted commending Dr. E. F. Kelly for his work on the National Retail Drug Code Authority, and following the instructions of the convention we are advising the officers of the AMERICAN PHARMACEUTICAL ASSOCIATION through you of this action.

> "WHEREAS, the work of Dr. E. F. Kelly as secretary of the National Retail Drug Code Authority was of inestimable value to members and officers of the N. A. R. D. and the retail pharmacists of the United States:
>
> "*Be It Resolved*, that the N. A. R. D. in convention assembled express its appreciation and thanks to Dr. E. F. Kelly in person and to the AMERICAN PHARMACEU-

TICAL ASSOCIATION for making his services available and that the officers of the AMERICAN PHARMACEUTICAL ASSOCIATION be advised of this action.

"The National Association of Retail Druggists appreciates the very splendid effort of Dr. Kelly in regard to this work, and also permit me to state that in my opinion it has been the most outstanding work that the AMERICAN PHARMACEUTICAL ASSOCIATION has done in so far as commercial pharmacy is concerned in its history. I trust that this letter and resolution will be called to the attention of all the officers of the ASSOCIATION."

(Signed) JOHN W. DARGAVEL, *Secretary.*

(*Motion No. 26*) It was moved by Arny, seconded by Hayman and carried, that the letter be spread on the minutes of the Council.

67. *Recommendation No. 1 in the President's Address.* Chairman Hilton called attention to the fact that consideration of the recommendation was taken up at the reorganization meeting of the Council in Portland and referred to this meeting of the Council. A general discussion of the recommendation and of its application followed. It was pointed out that Dr. Kelly's services to the Maryland Pharmaceutical Association did not require the assumption of administrative activities or extensive absence from his Washington office.

(*Motion No. 27*) It was moved by Hayman that the secretary be given permission to serve as secretary of the Maryland Pharmaceutical Association if he is requested to do so. The motion was seconded by Holton and carried.

68. *Election of Members.* The following applications were submitted:

No. 102, Isaac F. Harris, The Harris Lab., Inc., Tuckahoe, N. Y.; No. 103, Anna S. Hoffmann, 98 First Ave., Atlantic Highlands, N. J.; No. 104, Sister Constance Ryan, 365 Sixth Ave., S., Fargo, N. Dak.; No. 105, R. R. Muntz, Box 1060, Jamestown, N. Dak.; No. 106, Cyril H. Mergens, 226 W. Rosser Ave., Bismarck, N. Dak.; No. 107, Charles Hersey, Rugby, N. Dak.; No. 108, Joseph P. Cutting, 207 Main St., Williston, N. Dak.; No. 109, Carl F. Kaz, Gackle, N. Dak.; No. 110, Robert Wm. Elich, 2310 N. Sawyer Ave., Chicago, Ill.; No. 111, Leonard W. H. Charnock, 20 E. Delaware Pl., Chicago, Ill.; No. 112, Ray Gist, 1709 Ruby St., Pullman, Wash.; No. 113, William Engle, 11 Wave Ave., Beachmont, Mass.; No. 114, August Merz, c/o Calco Chemical Co., Bound Brook, N. J.; No. 115, Albert Greenlees, Methodist Hospital, Houston, Texas; No. 116, Lillian Herforth Bowen, 130 N. Wells St., Chicago, Ill.; No. 117, Elmer K. Walters, 5th and Main Sts., Richmond, Va.; No. 118; David Jacobson, 701 N. 28th St., Richmond, Va.; No. 119, Joseph Allegretti, 1201 W. Grand Ave., Chicago, Ill.; No. 120, Paul P. Famular, 3696 Boulevard, Jersey City, N. J.; No. 121, George L. Rumbaugh, 8231 Ingleside Ave., Chicago, Ill.; No. 122, Charles O. Wilson, University of Washington, Seattle, Wash.; No. 123, Abraham Kruger, 375 Osbourne Terr., Newark, N. J.; No. 124, Henry Louis Debus, Main St., Peapack, N. J.; No. 125, Theodore P. Koszalka, 95–06 99th Ave., Ozone Park, N. Y.; No. 126, Saul Rosin, 8701 91st Ave., Woodhaven, N. Y.; No. 127, David Shapiro, 663 Miller Ave., Brooklyn, N. Y.; No. 128, Reuben Cheron, 275 Hooper St., Brooklyn, N. Y.; No. 129, Herbert B. Canis, 101–66 94th St., Ozone Park, N. Y.; No. 130, Olga Julia Berzetes, 9132—79th St., Woodhaven, N. Y.; No. 131, Samuel S. Katz, 267 Oak St., Perth Amboy, N. J.; No. 132, Oscar S. Schwartz, 1034 Hoe Ave., New York, N. Y.; No. 133, Alexander Hollander, 140 W. 98th St., New York, N. Y.; No. 134, William B. Day, 1229 E. Dennison St., Davenport, Iowa.

(*Motion No. 28*) On motion of Cook, seconded by Hayman and carried, the applicants named above were elected members of the ASSOCIATION.

69. *Recommendation No. 9 in the President's Address.* In discussing this recommendation, Dr. Fischelis called attention to the value of the "Professional Pharmacy" to the Boards of Pharmacy in connection with their work in regulating the stock and equipment in drug stores. No action was taken on the recommendation.

70. *Recommendation No. 14 in the President's Address.* The secretary reported that this recommendation had been brought to the attention of the chairman of the Committee of Revision of the U. S. P. and it was the opinion that such action as is necessary should be taken jointly with the U. S. P. authorities.

(*Motion No. 29*) On motion of Fischelis, seconded by Arny and carried, the chairman was authorized to appoint a special committee of the Council to study this matter and to coöperate with any committee appointed by the U. S. P. Board of Trustees or Committee of Revision.

*71. Recommendation No. 17 in the President's Address.* Treasurer Holton reported that consideration had been given to the recommendation and submitted the following statement as indicating the money available from the various permanent and trust funds:

LIFE MEMBERSHIP—The available accumulated income, since 1920, amounts to $5843.57.

EBERT PRIZE—Income restricted to award.

CENTENNIAL—Income to "aid in the prosecution of original investigation."

ENDOWMENT—Income not available until fund amounts to $25,000.00 when 50% of the income may be used for any purpose deemed wise by the ASSOCIATION. Now $17,020.23.

EBERT LEGACY—Income not available until fund amounts to $10,000.00 and then "shall be devoted to such purposes as will in the opinion of the Council best commemorate the founder of the fund and his services to pharmacy." Now $8760.76.

RESEARCH—Income limited to honoraria and awards.

PROCTER—Trust fund.

REMINGTON—Trust fund.

He concurred in Chairman Philip's statement that it was too early to estimate what might be appropriated from the Current Fund during 1936 toward the inauguration of the activities mentioned.

(*Motion No. 30*) On motion of Fischelis, seconded by Philip and carried, the secretary was requested to list pending activities in the order of their importance and to apply funds now available or which may become available later to their execution.

*72. Articles of Incorporation of the A. Ph. A.* Mr. Philip submitted the results of his investigation of the incorporation of the ASSOCIATION in 1888. It was requested that the study be continued and that a report be submitted as promptly as is possible, for such action as may be required and for the guidance of the Committee on Constitution and By-Laws.

*73. Complimentary and Review Copies of N. F. VI.* The secretary reported that in addition to the copies of N. F. VI in leather which were being sent to the members of the Committee on N. F. and to the members of the Council, Chairman Gathercoal had submitted a list of those to whom it was recommended that copies of the N. F. in cloth should be sent as a token of appreciation for their services during its preparation and that the Committee on Publications had submitted a list of pharmaceutical, medical and other publications to whom it was recommended that copies in cloth should be sent for review.

(*Motion No. 31*) On motion of Swain, seconded by Eberle and carried, the recommendations with respect to complimentary and review copies of the N. F. VI were concurred in.

As it was impossible to complete the program on account of the lateness of the hour, the meeting was adjourned at 11:40 P.M., with the understanding that the remaining items of business will be submitted by mail.

If any members of the Council desire to submit corrections of the minutes of this meeting, they are requested to do so promptly.

E. F. KELLY, *Secretary.*

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## "A COMPARISON OF THE RATIOS OF WISCONSIN DRUG STORES AT THE TIME THE STATE PHARMACY LAW WAS PASSED AND AT PRESENT."*

This is one phase of a study of organized pharmaceutical activity in Wisconsin 1880–1930. The number of drug stores in each of the present ten congressional districts is tabulated with the population of that district, and the ratio computed. The congressional district was chosen as a unit because it is the most satisfactory unit for most if not all of the states.

It is of interest to note that in 1862 the ratio was 1:2418 and that a few years ago it was practically the same, *viz.* 1:2498. To draw the inference, as has been done, that the pharmacist of to-day is therefore as well off financially as he was half a century ago involves a grave misuse of statistics.

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* Abstract of a paper before Section on Commercial Interests, A. PH. A., Portland meeting, 1935—by Minnie Meyer and Edward Kremers.

# COMMITTEE REPORTS

## REPORT ON THE TWELFTH INTERNATIONAL CONGRESS OF PHARMACY.

BY EDGAR ERSKINE HUME.*,[1]

Mindful of the honor done him, though not a pharmacist, by being appointed Delegate on the part of the United States to the recent International Congress of Pharmacy, the writer feels it a duty to give the information that he gathered at this interesting and important Congress to the pharmaceutical profession of the country. His report to the Secretary of State is therefore given in its entirety, being published with the permission of that officer and of the writer's military superior, the Surgeon General of the Army.

The Twelfth International Congress of Pharmacy was held at Brussels, Belgium, from July 31, 1935, to August 5, 1935, inclusive. The sessions were all held at the University of Brussels, several miles distant from the center of the city, with the exception of certain social features.

The Congress was divided into sections, most of which met separately. Some of these sections were in turn subdivided into subsections, but only for committee work. The following were the sections, with the presidents and secretaries of each:

Official Badge of Major Hume as Delegate of the U. S. to 12th International Congress of Pharmacy.

First Section: *Pharmacognosy and Galenic Pharmacy. President*, Prof. N. Wattiez of the University of Brussels; *Secretary*, Pharmacist G. LaGrange.

The following topics were considered by the section, the presentations being made as indicated:

1. "Contribution to the Chemical Study of the *Sapotacea* of the Belgian Congo. The *Omphalo-carpum Boysankombo*." By Dr. L. Adriaens of the Chemical Research Laboratories of the Belgian Congo.

2. "*Triclisia Gillettii*, Staner." By E. Castagne, Engineer-Chemist of the Chemical Research Laboratories of the Belgian Congo.

3. "The Alkaloids of the *Liane Efiri*." By Pharmacist Delvaux of the University of Louvain.

4. "The Essential Oil of the Wallflower and of Patchouli from the Belgian Congo." By Dr. P. Denis of the Chemical Research Laboratory of the Belgian Congo.

5. "The Oil of *Euphorbia palustris*." By Prof. Paul Gillio of the Faculty of Pharmacy of Nancy.

6. "On the Spectrophotometric Dosage of the Alkaloids of the Ergot of Rye by the Reaction of van Urk." By Prof. F. Sternon of the University of Liége and Juliette Rensonnet.

7. "Study of the Unification of the Methods of the Preparation of the Heroic Galenic Vegetable Medicaments." By Prof. H. Golaz of Lausanne.

8. "Critical Studies of the Methods of Dosage of Alkaloids in the Official Preparation of Belladonna of the Belgian Pharmacopœia." By Prof. N. Wattiez, of the University of Brussels, and Pharmacist Gaston LaGrange.

9. "Opinion Concerning the Standards of the So-Called Chaulmoogra Oil for International Acceptance." By Prof. E. Perrot of the Faculty of Pharmacy of Paris.

10. "Contribution to the Study of the Seeds of *Strophanthus Congolais*." By Louise Ghenne, Assistant in the Institute of Pharmacy of the University of Liége.

Second Section: *Pharmaceutical Chemistry. Presideni*, Prof. A. Castille of the University of Louvain; *Secretary*, Pharmacist L. Delvaux.

The following topics were considered by the section, the presentation being made as indicated:

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* Delegate of the United States to the Twelfth International Congress of Pharmacy, Brussels, Belgium, 1935.

[1] Major, Medical Corps, U. S. Army, Librarian, Army Medical Library, Washington, D. C.

1. "Flowing Potentials and Absorptive Power of Barium Sulphate. The Rôle of Colloid Buffers of the Saponines." By Prof. Ruyssen of the University of Ghent.

2. "Titration of Alkaloids in Alcoholic Solution." By Prof. Baggesgaard-Rasmussen of the Royal Pharmaceutical College of Copenhagen.

3. "Spectrographic Research on the Alkaloids of Cinchona and Their Derivatives." By Prof. van der Wielen of the University of Amsterdam.

4. "Nucleic Acid in the Ergot of Rye." By Prof. M. Marek Gatty Kostyal, of the University of Crakow, and J. Tesarz.

5. "The Question of the Dielectric Constant in Problems of Chemical Constitution of the Organic Compounds in Relation to Their Pharmaco-Dynamic Action." By Kazamierz Kalinowski (Poland).

6. "Dakin's Solution of the Different Pharmacopœias: Analysis and Stability." By Colonel J. Thomann, Chief Pharmacist of the Swiss Army, Instructor at the University of Bern.

7. "Preparation and Stability of Dakin's Solution (Sodium Hypochlorite)." By Svend Aage Schou of Hellerup (Denmark).

8. "The Dosage of Hydrastine, Scopolamine, Hyoscyamine, Eserine and Apiol by the Mercurometric Method." By Prof. Al. Ionescu-Matiu, of the University of Bucharest, and Dr. C. Popesco.

9. "Halogen Analogues of Ephedrine and Adrenaline" (Presentation in English). By W. H. Linnell, M.Sc., of London.

10. "The Stability of Strophanthin Solutions" (Presentation in English). By B. Berry, B.Sc., of London.

Third Section: *Chemical Analysis and Toxicology*, Joint Session.

Fourth Section: *Bromatology*. *President*, Prof. F. Schoofs of the University of Liége; *Secretary*, Dr. H. Lecoq of the University of Liége.

The following topics were considered by these sections, the presentations being made as indicated:

1. "Limits in the Use of the Conductometric Method for the Determination of Bases and Weak Acids." By Konstanty Hrynakoswki, of the University of Poznan (Poland), and Feliks Modzejews.

2. "The Application of Potentiometric Titration in Pharmaceutical Analyses." By Dr. Oldrich Tomicek, Professor at the University of Prague (Czechoslovakia).

3. "Contribution to the Iodometric Control of Medicaments." By Prof. L. Maricq of the University of Brussels.

4. "The Application of the Determination of the Electrical Conductibility in the Examination of Waters." By J. Baldewyns of Liége.

5. "Titrimetric Colorimetry." By Prof. D. van Os of the University of Groningen (Netherlands) and Dr. P. Karsten.

6. "The Toxicity of Certain Insecticides." By Prof. F. Schoofs of the University of Liége.

7. "Phytopharmacy." By V. Estienne.

8. "Removal of Impurities by Barium Carbonate." By Pharmacist A. Defalque of the Laboratory of Biochemistry of the University of Louvain.

9. "A New Stabilized Antidote for Poisoning by the Heavy and Toxic Methods." By Prof. Casimir Stryzowsky of the University of Lausanne.

10. "A Case of Grave Alimentary Saturnism." By Prof. A. Castille of the School of Pharmacy of the University of Louvain.

11. "Quantitative Analysis of the Derivatives of Barbituric Acid. A Modification of the Method of Determination in an Alkaline Medium." By Kazimiers Kalinowski (Poland).

12. "Diabetic Bread." By Dr. T. Potjewijd, Pharmacist of Leyden.

13. "Spectrographic Study of the Waters of the Region of Spa." By Prof. R. Vivario, of the University of Liége, and P. Swings, Assistant.

14. "Analytical Differentiation of Cane Sugar from Beet Sugar." By Pharmacist Herbert of Cairo (Egypt).

Fifth Section: Omitted.

Sixth Section: *Microbiology. President,* Prof. A. J. J. van de Velde of the University of Ghent; *Secretary,* Mlle. (Pharmacist) Marg. van Hauwaert of the University of Ghent.

The following topics were considered by the section, the presentation being made as indicated:

1. "The Legal Regulation of the Manufacture of Therapeutic Serums and Various Products of Organic Origin." By Prof. A. Astruc and Louis Astruc.

2. "Experimental Pathogenic Action of the Actinomyces." By Prof. A. Sartory of the Faculty of Pharmacy of the University of Strassburg, R. Sartory and Jacques Meyer, Assistants.

3. "Influence of Various Acid and Alcohol Bodies and of Serums on the Mutation of the Tubercle Bacillus in Culture Media." By Prof. A. Sartory of the Faculty of Pharmacy of the University of Strassburg, R. Sartory, Jacques Meyer and Mlle. Renard, Assistants.

4. "Qualitative and Quantitive Determinations of Proteolytic Ferments Contained in the Gastric Juice, by the Interferometric Method." By Prof. A. Sartory of the Faculty of Pharmacy of the University of Strassburg, R. Sartory and Jacques Meyer, Assistants.

5. "On the Necessity of Sterilizing Medical Supplies." By Prof. Bronislaw Koskowski of the University of Warsaw.

6. "Bacteriological Appraisal of Modern Tooth Pastes and Mouth Washes" (Presentation in English). By Dr. Eugene Maier of Giessen (Germany).

7. "Study of the Fertility of the Soil on Dosage with Phosphorus and Potassium, by Means of Sterigmatocystis Nigra (Method of Niklas)." By Prof. A. J. J. van de Velde of the University of Ghent.

*Representation:*

"A. I have been, thus far, unable to obtain from the Secretary of the Congress a list of the countries represented or the total number of delegates. This information will be reported later if ascertained. Estimated number of delegates present (or at least persons who attended the sessions): 500. Estimated number of countries represented: 30.

"B. American delegation: I was the only delegate from the United States."

*Results of the Conference:* Resolutions Adopted: (1) *Phytopharmacy.*—Upon the motion of Prof. V. Estienne of the University of Louvain, the following was adopted: "Regulations should be elaborated for the manufacture, conditioning, dispensation and control of toxic products used in agriculture and horticulture. This Congress desires that this resolution be transmitted to the governments represented. The Congress believes that it is the duty of every pharmacist to be actively interested in pharmacotherapeutics in collaboration with regional agriculturists."

(2) *The Necessity of Sterilizing Medical Equipment.*—Upon the motion of Prof. Bronislaw Koskowski of Warsaw, the following was adopted: "A pharmacy, as a sanitary institution, must be careful not to become a place where contagion may be spread. The installation must be aseptic. The use of glass coverings for the tables and counters, as well as the sterilization of the glassware used in the pharmacy tends to give the impression of the greatest cleanliness, and inspires general confidence. One should anticipate the orders of the sanitary authorities that pharmacies be kept aseptic."

(3) *Price Regulation of Specialties Justified by Organized Chemical and Biological Control.*—Upon the motion of Pharmacist Breugelmans of Belgium the following was adopted:

"I. The pharmaceutical profession should be organized corporatively in order to safeguard the scientific, professional and economic interests of its members.

"II. In consideration of its great advances, the pharmaceutical profession should be organized so as to allow the pharmacist to face the requirements of analytical control in conformity to the legal regulations in effect in various countries.

"III. Professional obligations in this field being assured, monopoly in the sale of materials, and normal profits should be respected.

"IV. On account of the present extent of university instruction in most countries, the pharmacist has control of chemical products only.

"V. Since pharmacists have not had the necessary training, in such countries, for the examination of biological products, opotherapeutic agents or other materials requiring clinical tests, it is necessary that they have the assistance of qualified assistants with university training in pharmacodynamics and biology.

"VI. On account of the immensity of the task, there should be created a sufficient number of laboratories for the chemico-biological testing of products in order to carry out the examinations required by law.

"VII. These independent laboratories should be established by the organized profession and under state supervision. The State, unable legally to assume responsibility for sale, is able to stimulate and encourage private establishments working in accordance with public health needs.

"VIII. Organized pharmacy should create, equip and conduct its testing service for a moderate charge, in order to compensate to a certain extent for the cost of maintenance.

"IX. The State should take over, prior to their establishment, the control of such institutions to insure uniformity and the maintenance of high standards.

"X. In emergencies, and at first, there might be allowed modifications in the university program; when the need arises, registered pharmacists should be qualified to assume the duty of testing biologicals, having pursued courses of instruction at affiliated laboratories."

(4) *Regulation of Pharmaceutical Responsibility.*—Upon the motion of M. de Koritsansky and Dr. (Pharmacist) Tauffer of the Hungarian Pharmaceutical Association, the following was adopted:

"A committee of six members shall be appointed to study minutely and procure data concerning the responsibilities of pharmacists in various countries, and prepare recommendations regarding such regulations. The report of this committee shall be considered at the forthcoming meeting of the International Pharmaceutical Federation (Fédération Internationale Pharmaceutique) and the decision reached shall thereafter be submitted to the ensuing International Congress of Pharmacy and then brought to the attention of the various national associations forming part of the International Federation. Thus such national associations will be able to take the necessary steps with their respective governments to regulate the legal responsibilities of pharmacists."

(5) *Freedom in the Fixing of Charges by Organized Pharmaceutical Services.*—Upon the motion of M. Pattou, President of the *Nationale Pharmaceutique*, the following was adopted:

"Since the representatives of thirty National Associations of pharmacists agree upon the desirability of freedom in the matter of fixing charges, *it is resolved:*

"I. That patients treated in their homes should be authorized to procure drugs at any pharmacy that accepts the conditions of organization.

"II. That fees for the furnishing of medicines for patients treated in their homes by organized services cannot be standardized without the collaboration and agreement of the interested associations of pharmacists.

"III. That fees for persons in moderate circumstances should be reduced, taking into consideration living conditions in each country.

"IV. That associations of pharmacists, wholly interested in compliance with the established tariffs and in the careful compounding of prescriptions, should be organized to assume proper technical control of this work and in the observance of the professional oath.

"V. That there should be established an impartial board for arbitration and the prevention of differences that might arise between organized pharmaceutical services and individual pharmacists.

"VI. In consideration of the faithful collaboration of organized pharmaceutical services, all laboratories with pharmaceutical workers established by social insurance agencies and similar organizations, should be prohibited in those places where organized pharmaceutical services exist."

(6) *Medico-Pharmaceutical Combinations.*—Upon the motion of Pharmacist Breugelmans of Brussels, the following was adopted:

"Since medicine and pharmacy are professions based on different university training, the pharmacist alone is qualified to perform pharmaceutical work. Pharmacy is a profession of the greatest public utility and of the greatest possibilities, it should therefore be encouraged in regions where it does not flourish. Pharmacy should justify its existence legally, scientifically and morally, so that it cannot be replaced by a depot of medicaments dispensed by a physician or by any person outside of both professions. That combinations of medicine and pharmacy must be considered as detrimental in all places where there is a registered pharmacist. That license for the practice of medicine combined with the dispensing of drugs must be strictly regulated and in

such manner as to prevent or restrict all operations for profit by the collusion of the two professions."

(7) *Uniform Laws in All Countries Regarding the Sale of Drugs.*—Upon the motion of Pharmacists H. Portisch, O. Hoyer and F. Schweder of Vienna, the following resolutions were adopted:

"I. That a definition of the word 'medicament' be required as preliminary to every law concerning the healing art.

"II. That the word 'consumer' must be limited and defined.

"III. That the 'distributer' be no other than a pharmacist, and that no person be interposed between the producer and consumer who is not a pharmacist.

"IV. That, with the exception of a few dietetic products, the sale of medicaments be limited to pharmacists.

"V. That the production (manufacture) of drugs be reserved to pharmacists or to authorized institutions conducted by pharmacists.

"VI. That the sale of specialties and drugs by wholesale dealers be limited to authorized pharmacists.

"VII. That the production of drugs be in normal amounts as superproduction is an actual danger to the public."

(8) *The Organization of Military Pharmacists in European Countries.*—Upon the motion of Pharmacist Barthet of France, the following was adopted:

"That the British delegates to this Congress present to their government a report on the organization of military pharmacists in Europe, Great Britain being the only European country that does not have military pharmacists."

(9) *Inspection of Pharmacies in Various Countries.*—The following conclusions by Pharmacist C. J. Ravaud, of France, were received and transmitted to the International Pharmaceutical Federation for study:

"I. Inspection of pharmacies is absolutely indispensable for the preservation of public health.

"II. It should not be limited only to technical control, but also should comprise detection and prosecution of illegal practices.

"III. Such inspection should be entrusted to pharmacists chosen from among professors of the schools or faculties of pharmacy or from among recognized practitioners skilled in inspection.

"IV. That the inspectors should be appointed directly by the government; that they should be permanent and have extensive powers to enable them efficiently to perform their duties.

"V. It is desirable that government authorities be assisted by a Consultative Council representing various elements of the pharmaceutical profession of the nation."

(10) *A New System of Pharmaceutical Education.*—Upon the motion of Dr. of Medicine and of Pharmacy Alexander Moszony of the University of Budapest, the following was adopted:

"In each country where it is necessary, the International Pharmaceutical Federation should envisage a restriction in the number of pharmacists trained, in accordance with national exigencies."

(11) *The Rôle of Pharmacists in Civilian Defense against Gas.*—Upon the motion of Prof. Wester of Holland and Pharmacist Weil of Brussels, *it was resolved:*

"That the XII International Congress of Pharmacy, recognizing the services rendered in all countries by pharmacists in defense against chemical warfare, expresses the following requests:

"I. To Universities: To enlarge their courses in analytical chemistry, toxicology and bromatology by more thorough study of war poisons; and that the faculties of pharmacy organize courses for supplementing the knowledge of persons who received their diplomas from said universities in the past.

"II. To National Red Cross Societies: That an important place be reserved for pharmacists in educating the population (courses of instruction for litter-bearers), in the study of means of passive defense applied to aid for victims, and in the mobilization of the Red Cross.

"III. To Governments: That national and regional organizations utilize on a large scale the skill of pharmacists, for which their studies particularly qualify them, in the general organization for the detection of gas, disinfection and inspection of gas masks, management of shelters, and the conservation of chemical and pharmaceutical products."

(12) *Methods of Elaborating Pharmacopœias.*—Upon the motion of Pharmacist Van Huffelen of the Society of Pharmacy of Antwerp, the following conclusions were recommended, but not adopted:

"I. Since for major reasons, pharmacists are included in the commissions on pharmacopœias, it is hoped that all governments will adopt measures necessary to assign to such work, practicing independent pharmacists.

"II. Since the contact between pharmacopœia commissions and the organized pharmacists must be maintained not only before but also during the elaboration of and preparation of new additions of such pharmacopœias,

"III. We recommend that various governments bring home to physicians the importance of a knowledge and use of the most recent edition of the pharmacopœia."

(13) *An International Pharmacopœia.*—Prof. van Itallie offered the following considerations on Pharmacist Van Schoor's (Antwerp) recommendations. Prof. van Itallie's recommendations were adopted by the Congress as follows:

"The Sixth general meeting of the International Pharmaceutical Federation, held at The Hague, September 6 and 7, 1927, accepted, without discussion, the following proposition:

"I. The general meeting shall nominate a commission composed of seven members, charged with presenting a report on the possibility of publishing a restricted international pharmacopœia.

"II. This commission will forward its report within the next six months to the bureau of the Federation. The latter will present it to the Belgian Government and to the Hygiene organization of the League of Nations.

"The full report of this commission, of which Prof. van Itallie was *president* and A. Schammelhout *secretary*, was published in Bulletin No. 1, 1928, pp. 11–20. It was addressed to the above authorities. Up to the present time we have not heard whether any resolution or decision has been reached on this report.

"The Brussels Conference of 1925 on heroin derivatives asked for the appointment of two commissions by the League of Nations, one to determine methods of analysis, the other for the study of galenic medicaments. These two commissions have not yet been created. Of the persons recommended for places on these commissions, some are no longer with us and new members should be designated by duly constituted organizations. The needs that brought forth our report in 1928 still exist, and the recommendations are renewed.

"With a sufficient desire a restricted international pharmacopœia may be elaborated in time."

(14) *Abolition of Restrictions on Narcotics.*—Dr. of Pharmacy Chieffo of Rome reported that: "Legislation is very different in various countries. As concerns a system of regulation, the pharmacist should demonstrate sufficient moral qualities to prevent his being compromised as to the improper dispensation of narcotic drugs. Limitation of production of such drugs is suggested as the only means of preventing abuses."

The report was submitted for consideration to the International Pharmaceutical Federation.

*Important Points on Which No Agreement Was Reached:*

These have been mentioned in the last paragraph, being chiefly recommendations of various delegates that were not passed by the Congress.

*Publications.*—The Secretary General of the Congress promised that minutes would be sent each delegate who had subscribed the required fee. I did so, but so far no minutes have come to hand. The only available publication of the Congress is the program issued in advance, which is transmitted herewith.

*Part Taken by the American Delegation.*—The writer, the only American delegate, not being a pharmacist in any sense of the word, was able to take no very active part in the sessions. For interest he inquired of the representatives of a number of other countries to ascertain if physicians were among their number. As far as he could learn, he was the only physician of the Congress, except certain men who held degrees in both medicine and pharmacy or one of its branches.

The writer, who is Librarian of the Army Medical Library, was able to discuss the matter of scientific publications and their cost. That the Army Medical Library, the largest medical

library in the world, indexes articles from journals of pharmacy in its *Index Catalogue*, the world's standard of bibliography in the medical sciences, was a matter of pride to the pharmacists of other nations. A number of delegates promised to send material as a gift to the Army Medical Library, and some of this has been received.

*Action Taken by the Conference with Regard to Future Meetings.*—There is no question as to the continuance of the International Congresses of Pharmacy, which have a fixed place particularly in European countries. Article IX of the Rules of the Congress require the final session to select and announce the date and place of the next Congress. The President, however, announced that though more than a dozen countries had extended invitations for the next meeting, it was deemed advisable to give the matter further thought. It was therefore voted that the place and date of the next Congress would be left to the Committee of the International Pharmaceutical Federation (Fédération Internationale Pharmaceutique).

General Comment: *Importance of the Conference.*—The Congress was a worth-while gathering of some of the world's best scientists in the field of pharmacy in the European sense of the term, that is, the broad topics of chemistry (inorganic, organic and physiologic), pharmacology, bacteriology, serology, biology, etc. There was nothing in the conference that pertained to pharmacy as the mere compounding of drugs. The problems of the production of medicinal plants, the mining or other acquisition of inorganic compounds, the manufacture of biologicals, the testing of these various products, were considered. The representatives of most of the European countries were professors at the several universities or research institutions. But little attention was paid to the purely commercial side. The general subject of costs of manufacture was discussed in passing, but only in relation to its bearing on pure science. In other words the meeting was unlike what in this country would be expected at a meeting of certain pharmaceutical associations.

The meeting is believed to have been an important one. From conversations with delegates from other countries, I gained the impression that the International Congresses of Pharmacy are held to be among the most important of gatherings of scientific men. Again and again the opinion was expressed that the United States might add much to the meetings by sending professors from the leading universities, men who could present America's views in these fields. In this country, as far as I have been able to learn, there are no scientific bodies comparable to this International Congress. Here to bring together men of these varied interests it would be necessary to have a joint meeting of pharmacologists, chemists and bacteriologists.

One striking difference in the functions of the pharmacist in Europe and in this country is seen in the status of the pharmacists in the Continental armies and that of the United States. In the United States Army the term pharmacist implies merely a trained enlisted man capable of compounding prescriptions. In Europe it means a highly educated professional man. The European Armies nearly all have Corps of Pharmacists distinct from the Medical or Administrative Services. In our Army much of the work that the pharmacist officers do in Europe is performed by medical officers. This includes the routine diagnostic laboratory procedures, general sanitation, and to a limited extent the production of biologicals.

The American delegate quitted the Congress with the feeling that it is to the advantage of the United States to be represented at future International Congresses of Pharmacy. They are old and well-established meetings and much valuable information is to be had by those attending, particularly by personal contacts. Some of our distinguished authorities in pharmacology and pharmacy would be able, on the other hand, to add much to the meetings.

Since the meetings are conducted in French, it seems highly desirable that persons attending the Congress be familiar with that language. Those without a knowledge of French might enjoy the social functions but would get little out of the scientific sessions, and also be unable to discuss matters of common interest with delegates from other lands.

*Miscellaneous.*—There were a large number of social events in connection with the Congress. The King and Queen of the Belgians attended the opening session. (The closing paragraph of the report is largely concerned with conditions and entertainments and therefore omitted.—*Editor.*)

## INTERNATIONAL PHARMACEUTICAL FEDERATION.

The officers of the International Federation are: *President*, Dr. J. J. Hofman, The Hague, Holland; *General Secretary*, Dr. Potjewijd, Leyden, Holland; Secretary, Oscar Van Schoor, Antwerp, Belgium.

A communication has been addressed to the ordinary members of the International Pharmaceutical Federation in which it is stated that a letter had been transmitted to the authorities of the Countries represented in the 12th International Congress of Pharmacy, containing the conclusions on certain questions which were discussed by the Professional Section and it is suggested that if the problems presented are of interest to the Countries represented that the governmental authorities be asked to study the conclusions arrived at.

The communication received is signed by President J. J. Hofman and General Secretary T. Potjewijd under date of November 28, 1935. It is addressed to the Minister of Hygiene and Public Health. Another letter follows to the ordinary members of the International Pharmaceutical Federation and to co-members.

Charles H. LaWall was appointed delegate to the meeting of the International Pharmaceutical Federation and to the 12th International Congress of Pharmacy held in Brussels July 30 to August 5, 1935. Conditions over which the appointed delegate had no control made it impossible for Professor LaWall to attend.

Major Edgar Erskine Hume, Medical Corps, United States Army, was the only delegate of the United States present, but not officially designated a representative of the AMERICAN PHARMACEUTICAL ASSOCIATION. He has submitted a report on the 12th International Congress of Pharmacy to the AMERICAN PHARMACEUTICAL ASSOCIATION for publication in the JOURNAL. It precedes.

### COMMUNICATION TO THE MINISTER OF HYGIENE AND PUBLIC HEALTH.

"The 12th International Congress of Pharmacy which has held a convention at Brussels from July 30 to August 5, 1935, has entrusted the International Pharmaceutical Federation, with headquarters in The Hague, with the mission of transmitting the decisions of the Congress to the Governments of the 29 Nations which participated in the Congress and are represented in the International Pharmaceutical Federation.

"It is in pursuance of this mission and to comply with obligations formally placed upon us that we have the honor, Mr. Minister, to transmit to you expressions of opinion on three questions which are under the direct supervision of your Department.

"These three questions are of great interest for all the Countries spoken of above.

"For this reason we have decided to group all three in order to bring the expression of our views to the knowledge of the Governments having members in the International Pharmaceutical Federation.

"In consequence, Mr. Minister, we have the honor to call your attention very particularly to these views. They were discussed at length and conscientiously before their adoption, which was by the unanimous vote of the members of the Congress present at the sessions of Wednesday, July 31st and Friday, August 2nd.

"We are asking our members and affiliates of your Country to see that you also receive the reports upon which the resolutions adopted by our meetings were based. These reports, which are concise and drawn up in accordance with the regulations of the Congress, give only a general idea of a doctrine familiar to us as professional persons, but are sufficient to justify the views expressed by the Congress, of which the following is a textual statement:

"*First Question.*—Adoption of uniform laws in all countries tending toward a rigorous regulation of commerce in medicaments.

"1. That the definition of the word medicament is necessary as a preliminary of any law concerning itself with the healing art.

"2. That the word consumer should also be equally well defined and limited.

"3. That the distributer cannot be any other person than a pharmacist; no other person than a pharmacist shall be permitted to interpose himself between the producer and the consumer.

"4. That the sale of medicaments, with the exception of certain dietetic products, shall be reserved to pharmacists.

"5. That the production (manufacture) of medicaments should be reserved to pharmacists or to institutions enjoying previous authorization and directed by pharmacists.

"6. That the sale of medicaments and specialties by wholesalers should be limited to sale solely to authorized distributers, namely, pharmacists.

"7. That the production of medicaments should be held to normal requirements, as overproduction constitutes a real public danger.

"*Second Question:* Duplication of Professions.—Believing that medicine and pharmacy are two separate professions, requiring different university preparation;

"That the pharmacist alone is qualified to exercise the profession of pharmacy;

"That pharmacy is a profession of public utility and that its diffusion in regions now deprived of it is necessary in as large a degree as possible;

"That pharmacy justifies its existence legally, scientifically and morally, and cannot be replaced by a depot of medicaments attended by a physician or by some person belonging to neither of the two professions;

"That the union of the practice of medicine with a pharmaceutical depot should be considered as an abuse in any locality where there is a regularly established pharmacist;

"That the license to practice medicine, joined with that to deliver medicaments, should be strictly regulated everywhere in order to prevent or prohibit any operations for profit which may be realized by the union of the two professions into one:

"Accordingly: The desire is expressed that the limitation and separation of the two professions should be provided for by law, in accordance with the professional groupings and with a view to the interests of the public health.

"*Third Question.*—Control of specialties and regulation of sale price.

"1. Pharmacy should be corporatively organized in order to safeguard the professional, scientific and economic interests of its members.

"2. In view of the excessive development of pharmaceutical specialties, the organized profession of pharmacy should take collective action to have the pharmacist permitted to assume the obligation of analytical control of specialties, according to the legal requirements in force in each country.

"3. Having assured the observation of professional obligations in this respect, the organized corporation should provide that the monopoly of sale of the specialty and a normal profit in such sale be respected.

"4. In the present state of the knowledge which can be acquired at universities in most countries, the pharmacist can only be assured of chemical control of specialties.

"5. From the fact that the pharmacist has not received the desired preparation in these countries to enable him to effect, competently, control of biologic, opotherapic or other compositions necessitating a clinical test, recourse should be permitted upon occasion to qualified assistants, to be chosen from university graduates who have specialized as pharmacodynamists or biologists, and who have their diplomas as such.

"6. In view of the enormity of the task, there should be created a sufficient number of chemico-biological laboratories, which will be specialized in view of the multiplication of collaborations made necessary by the division of labor.

"7. These autonomous laboratories will function by the initiative of the organized profession and under the supervision of the Government. The Government, unable in law to assume any responsibility for the seller, is qualified to stimulate and encourage private initiatives acting in conformity with the requirements of the public health.

"8. The organized profession of pharmacy will undertake to create, equip and rent its control services, levying a light tax on the interested parties to compensate itself in some measure for its pecuniary outlay.

"9. The Government will require control of all specialties, prior to their registration, by the services of the corporation, in order to assure the conformity of such specialties to their formulas and to legal requirements in regard to their preparation, conservation, etc.

"10. In the meanwhile it is urgently necessary to strive for modifications in university courses in pharmacy, wherever it may be necessary, in order that graduates may receive a pharmaceutical diploma enabling them to exercise biological control, after instruction and a practical laboratory course in competent institutions.

"We express the hope, Mr. Minister, that you will give our communication your attention and that you will recognize the public interest in the above propositions, all of which are in absolute conformity with the interests of the public health.

"Requesting you to receive, Mr. Minister, the assurance of our great consideration,

"For the International Pharmaceutical Federation,

The *Secretary*, T. POTJEWIJD. The *President*, J. J. HOFMAN."

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Letter to the Ordinary Members of the International Pharmaceutical Federation:

Leyde, November 28, 1935.

Gentlemen and Honored Co-members:

We are enclosing a letter which we have sent to the Authorities of the Countries represented in the 12th International Congress of Pharmacy.

As you will see from this letter, it contains the conclusions on certain questions which were discussed by the Professional Section.

If you consider these problems to be of interest to your Country, we suggest that you urge your governmental authorities to study the conclusions arrived at here.

Please accept, Gentlemen and Honored Co-members, the assurance of our most sincere esteem.

The *Secretary General*, (Signed) T. POTJEWIJD. The *President*, (Signed) J. J. HOFMAN.

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*Courtesy of Northwestern Druggist.*

This group picture was taken on the occasion of the visit of Dr. Robert Eder to the College of Pharmacy, University of Minnesota. Lower row, seated: Left to right—Dean Frederick J. Wulling, Dr. Robert Eder, director of the Institute of Pharmacy, Zurich, Switzerland; Dr. Isaac Kolthoff, professor and chief of the Division of Analytical Chemistry, U. of M. Standing, left to right: Professor Charles H. Rogers, Pharmaceutical Chemistry and Food and Drug Analysis; Professor Earl B. Fischer, Pharmacognosy and Materia Medica; Professor Gustav Bachman, Pharmacy and Dispensing.

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## S. 3084 PHARMACY.

The bill referred to under title was introduced by Senator Copeland and discussed at Portland by the A. PH. A., A. A. C. P. and N. A. B. P. It is considered a basis for a model pharmacy law and it is suggested that legislative committees obtain copies for consideration. R. L. Swain discussed the measure and speaks of it as, "a sane and deliberate approach to better legislation controlling the sale and distribution of drugs and medicines and builds greater safeguards around the practice of pharmacy."

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# OBITUARY.

## FREDERICK WILLIAM MEISSNER.

Frederick William Meissner, of La Porte, Indiana, for many years active in the AMERICAN PHARMACEUTICAL ASSOCIATION and a regular attendant at its meetings, died December 7th, aged 76 years. The following brief biographic sketch is taken from the records of the Chicago Veteran Druggists' Association (1930), of which Mr. Meissner has been an associate member since 1909:

"Frederick William Meissner was born in La Porte, Indiana, December 5, 1859; he received his education in the public and private schools of that city and began his pharmaceutical career October 13, 1874, taking a position with Dr. Eliel Sons. In 1878, due to ill health, he went West and in Denver, Colorado, took employment with the Huyck's Drug Store. Returning to La Porte in 1879, he again engaged with Dr. Eliel Sons until they sold the pharmacy to Dr. A. U. Morris.

"In 1881, he was employed with H. K. Metcalf & Co., 172 N. Clark St., Chicago. In the spring of 1882, he returned to La Porte and in association with J. H. Henry Kuehne took over what had been one of the branch stores of the Dr. Eliel Sons, and conducted the same under the firm name of Kuehne and Meissner until the spring of 1886, when Mr. Meissner disposed of his interest in the firm and entered Philadelphia College of Pharmacy, from which he was graduated in 1888. In the fall of the same year he opened a new pharmacy in La Porte, and has conducted the business continuously in the same location up to the present time."

Mr. Meissner was a former member of the U. S. P. Board of Trustees, served as president of Indiana Pharmaceutical Association, was one of the organizers of the National Association of Retail Druggists and member of its Executive Committee. He served on the Auxiliary Committee of the National Formulary V. He joined the AMERICAN PHARMACEUTICAL ASSOCIATION in 1890 and was chairman of the Section on Commercial Interests, 1901–1902. For a number of years he was president of the La Porte City School Board.

The deceased is survived by his widow, who accompanied her husband to many of the annual meetings of the A. PH. A.

## ANTOINE EDWARD GREENE.

Antoine Edward Greene, professor of Pharmacy at Howard University College of Pharmacy, Washington, D. C., died November 30th, aged thirty-three years.

Professor Greene was born in Cambridge, Mass., son of Charles and Annie E. Greene. He graduated from Massachusetts College of Pharmacy in 1922 and attended Massachusetts Institute of Technology in 1923, 1925 and 1926; in 1924, he was a student at the University of Paris (France). In 1922 he was appointed assistant in Bacteriology, under Dr. Algernon B. Jackson, School of Medicine, Howard University. January 1924, he was named instructor in Theory of Pharmacy and Associate Professor of Pharmacy in 1926, which position he held at the time of his death. He attended the Summer Sessions at the University of Michigan, College of Pharmacy, 1929–1930, and at the University of Wisconsin, 1932–1933.

Professor Greene was a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1930, and during these years contributed a number of papers, published in the Scientific Section of the JOURNAL and in the Department of American Association of Colleges of Pharmacy.

**James H. Breasted,** the noted Orientalist and Egyptologist, who passed away December 2nd, was at one time engaged in pharmacy; he graduated in 1886 from the Chicago College of Pharmacy—the College of Pharmacy of the University of Illinois.

**John B. Michels,** El Paso, Illinois, a former president of the Illinois Pharmaceutical Association and for many years Mayor of his own city, died December 5th.

## DEATH OF FORMER PRESIDENT L. L. WALTON.

L. L. Walton, president of the AMERICAN PHARMACEUTICAL ASSOCIATION, 1925–1926, died December 26th, following an illness extending over a period of several months; he had been in poor health for a year or more. Sympathy is expressed at this time and a sketch will appear in the January number of the JOURNAL.

## PERSONAL AND NEWS ITEMS.

*Wishes for a Successful 1936.*

**H. K. Mulford** was tendered a dinner at the Union League on October 31st, by the National Drug Club, in honor of his completion of 50 years in pharmaceutical work.

**C. C. Harris,** of Houston, has resigned as *President* of Texas Pharmaceutical Association. B. B. Brown, of Dallas, is the *First Vice-President.*

**Martin E. Adamo,** a fellow-member has been appointed a member of the Advisory Board of the Division of Immigration and Americanization, under the Department of Education.

Among the highlights of the National Drug Trade Conference were: Endorsement of fair trade legislation, fair trade enabling act, Copeland bill, collection and compilation of evidence relating to harm or danger to public health in the present system of distributing medicines at retail.

**Dr. Raymond A. Pearson,** former president of the University of Maryland, has been appointed special assistant to Rexford G. Tugwell.

Officers of Ohio Valley Druggists' Association are: *President,* Philip A. Schwartz; *Vice-President,* Chester A. Lathrop; *Secretary,* Stanley Roth; *Treasurer,* Otto E. Kistner.

Members of the AMERICAN PHARMACEUTICAL ASSOCIATION were ably represented at the St. Louis meeting of the American Association for the Advancement of Science and several of the papers received front page recognition in the press. Among the latter, papers by John C. Krantz, Jr., C. Jelleff Carr, Ruth Musser, William Harne, James C. Munch, Theodore Koppanyi, James M. Dille, Charles R. Linegar. No doubt others of those mentioned on page 943 of the November JOURNAL received related mention, but at this late day their contributions did not come to this writer's attention.

The Texas Centennial will open at Dallas, June 6th. Here in August the 84th meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION will be held.

## BOOK NOTICES AND REVIEWS.

*A Text-Book of Medical Jurisprudence and Toxicology.* By JOHN GLAISTER, M.D., D.P.H., F.R.S.E., in collaboration with JOHN GLAISTER, JR., M.B., CH.C., M.D., D.Sc. Fifth edition. Published by William Wood and Company, New York City, 1931; xv + 954 pp.; 132 illustrations and 7 plates. $10.00.

Glaister has been an authority in medical jurisprudence and toxicology for the last half century in England. American students are probably less familiar with this authority. The first sixteen chapters of the fifth edition deal with medical jurisprudence: the various British laws and Scotch criminal procedure, nature of evidence, identification, pathological changes in drowning, hanging, electrocution, exposure, apoplexy and following various types of wounds, blood stains and identification, pregnancy, abortion, infanticide, drunkenness and lunacy. A very large number of case reports are presented to illustrate various phases of medical jurisprudence, and 117 figures set forth various features. Photomicrographs of various types of hair, post-mortem appearances following wounds, methods of identity by fingerprints are clearly illustrated.

The second section deals with toxicology: definitions of poisons, poison schedules, the Dangerous Drugs and the Therapeutic Substances Acts, and the procedure to be followed in cases of suspected poisoning. The last three chapters deal with irritant poisons, arsenic, phosphorus, various halogens, the opium alkaloids, cannabis, cocaine and a number of vegetable alkaloids. A portion of the last chapter discusses food poisoning, botulism, snake bites, stinging fishes and arrow poisons. The world tolerances for arsenic are discussed, but the Manchester Beer poisoning receives only brief mention. Characteristic responses from exposure to toxic doses of various poisons, as well as abstracts of a number of legal cases of murder with various types of poison (Crippen, Smith, Lyons, McCracken, Cotton, Cross, etc.) are described in some detail. This will prove a very helpful book for analysis and legal presentation of toxicology.—JAMES C. MUNCH.

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The Seventh American Scientific Congress was held in Mexico City, September 8th–17th, in the Palace of Fine Arts. It was opened by the President of the Republic of Mexico. Various American countries were represented by delegates. The work of the sections was divided into physical and methodical sciences, geology, engineering and industrial chemistry, agricultural sciences, biological sciences, medical sciences, hygienical sciences, anthropological and historical sciences, social and economic sciences, and bibliography, Indianism, juridical sciences.

A number of interesting papers were read and the AMERICAN PHARMACEUTICAL ASSOCIATION was represented by Gillermo G. Colin and Manuel Donde Gorozpe.

# AMERICAN PHARMACEUTICAL ASSOCIATION

## OFFICIAL ROSTER FOR 1935-1936

*(Committees will be corrected as appointments are made by the President, Chairman of the Council, Chairman of the House of Delegates, and Chairmen of the Sections.)*

### OFFICERS OF THE ASSOCIATION.

*President*, P. H. Costello, Cooperstown, No. Dak.
*Honorary President*, D. M. R. Culbreth, Baltimore, Md.
*First Vice-President*, Frank A. Delgado, Washington, D. C.
*Second Vice-President*, J. Lester Hayman, Morgantown, W. Va.
*Secretary*, E. F. Kelly, 2215 Constitution Ave., Washington, D. C.
*Treasurer*, C. W. Holton, Box 81, Essex Fells, N. J.
*Editor of the Year Book*, A. G. DuMez, Lombard and Greene Sts., Baltimore, Md.
*Editor of the Journal*, E. G. Eberle, 2215 Constitution Ave., Washington, D. C.

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(Continued on page x)

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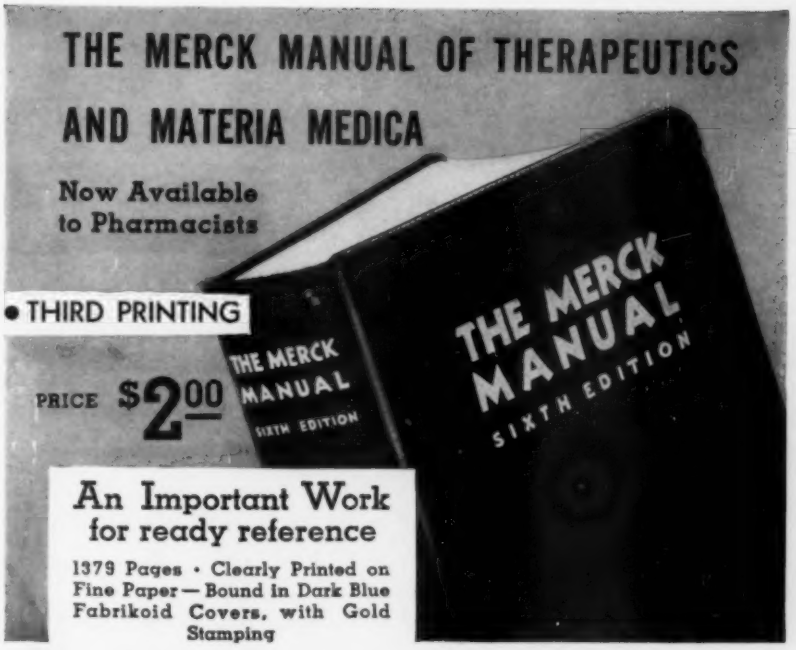


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